



Contaminants and Remediation Division  
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April 6, 2023

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***Great Bear Lake Sites – 2022 Annual Water Licence Report (Licence #S17L8-002)***

**Prepared for: Sahtu Land and Water Board**

**Date: April 6, 2023**

Version	Submission Date	Revisions
1	April 6, 2023	

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) – Northwest Territories Region – Contaminants and Remediation Division (CARD) received a Water Licence renewal from the Sahtu Land and Water Board (SLWB) effective July 25, 2017 for the Great Bear Lake Sites (GBL Sites) Remediation Project. This Water Licence was subsequently amended on September 11, 2017 and again on October 30, 2017 to reflect minor administrative changes and carries Licence # S17L8-002. The Water Licence entitles the use of water and waste deposition in support of remediation and restoration activities at the Great Bear Lake Sites (GBL Sites), including the Silver Bear Mines, Contact Lake Mine, El Bonanza/Bonanza Mine and the Sawmill Bay site. Table 1 outlines the most current Water Licence details.

**Table 1: Licence Information**

Licensee	Crown Legal name of Crown-Indigenous Relations and Northern Affairs Canada – Contaminants and Remediation Division
Licensee Mailing Address	Box 1500, Yellowknife, NT X1A 2R3
Licence Number	S17L8-002 – Admin Amend
Licence Type	B
Location	Great Bear Lake Mine Sites: Sawmill Bay, Silver Bear Mines, El Bonanza/Bonanza Mines and Contact Lake Mine
Purpose	Water use and Waste Disposal to support remediation works



Effective Date of Licence	October 30, 2017
Expiry Date of Licence	July 24, 2024

In accordance with the requirements of the Water Licence, CIRNAC-CARD has produced the following 2022 Annual Water Licence Report. This report follows the format as presented in the updated Water Licence S17L8-002 Schedule 1, Part B: General Conditions, in which requirements of the Annual Water Licence Report are outlined. Where necessary, additional information has been added which may be of interest to the SLWB.

It is important to note that the Water Licence was issued in support of upcoming remediation activities at the project sites. **However, during the 2022 period the sites remained in pre-remediation status and no site remediation occurred.** A monitoring program was delivered in August, 2022. Sahtu De, a Délı̨nę based contractor, provided job shadows and wildlife monitors out of Délı̨nę to assist in the program.

The following tasks were completed during this visit:

### **August 6-8, 2022**

#### **Water Quality Monitoring**

- The 2022 Water Quality Monitoring Program that was conducted as per the *GBL Sites Pre-Remediation Monitoring Plan (PRMP)*, dated June 28, 2018, which was approved by the SLWB. Requirements of the PRMP were outlined within the renewed Project Water Licence S17L8-002 ("Admin Amend" version dated October 30, 2017)
  - Associated report is appended





## **Schedule 1 Part B: General Conditions**

1. The **Annual Water Licence Report** referred to in Part B, Item 15 shall include, but not be limited to the following information:

a) *A summary of the calibration and status of meters and devices referred to in Part B, Item 14 of this Licence;*

Water Licence Part B, Item 14 states “The Licensee shall install, operate, and maintain meters, devices or other such methods used for measuring the volumes of Water and Waste discharged to the satisfaction of an Inspector”.

There were no remedial activities or associated remedial field camp requiring the use of devices/meters.

b) *The monthly and annual quantities in cubic metres of fresh water obtained from all sources;*

There was no fresh water obtained from any sources during the 2022 period.

c) *A summary of engagement activities conducted in accordance with the approved **Engagement Plan**, in Part B of this Licence, undertaken during the previous calendar year and shall include a brief description of activities planned for the forthcoming year;*

The following engagement activities were conducted during the 2022 period:

- March 15, 2022 - Délıne Got'ine Government, CIRNAC, and CanNor meeting to discuss economic and capacity development opportunities, site visits, support to Délıne businesses, and economic benefits from the GBL Project.
- April 8, 2022 – Tłıchq Government Project Update Meeting
- April 13, 2022 - GBL Operations Committee Meeting
- April 20, 2022 - GBL Operations Committee Meeting
- October 12, 2022 - GBL Operations Committee Meeting
- October 13, 2022 - Remediation Management Committee Meeting and Délıne Leadership Meeting
- November 8-9, 2022 - GBL Operations Committee Meeting
- November 17, 2022 – Meeting with Tłıchq to discuss Tłıchq Knowledge gathering opportunities
- December 11-12, 2022 – GBL Operations Committee Meeting

Engagement will continue in 2023 and is currently anticipated to include the following:

- Community Update Meetings, Traditional Knowledge exercises, Canada-Délıne Operations Committee meetings, Canada-Délıne Remediation Management Committee



meetings, community site tours, and training program related to the upcoming remediation work at the GBL project site.

- The Community Liaison Coordinator and/or Construction manager position will continue to be funded in Déḻnē through a contribution agreement that assists in planning engagement meetings and communicating with community members about the project.
- Additional training opportunities will be provided during the 2023 period related to the Water Quality Monitoring Program, Hazmat abatement, the continued gap analysis/care and maintenance programs as well as in preparation for the remediation implementation.
- Project updates will continue being provided to the Waste Sites Management Committee when they meet.
- Project updates will be provided to the Déḻnē Goṯ̱nē Government and the Tł̱chq̱ Government according to the approved Engagement Plan.

d) A summary of **Construction** activities conducted in accordance with Part F of this Licence, undertaken during the previous calendar year;

No construction activities were conducted during the 2022 period.

e) An updated schedule of activities for the undertaking;

The project is intending to move into remediation phase in 2025 following the development of the procurement plans in the 2023/2024 Fiscal Year. Once the schedule is confirmed, this information will be promptly provided to the SLWB.

f) A summary of **Modification** activities and major maintenance work conducted in accordance with Part E of this Licence, undertaken during the previous calendar year;

No modification activities or major maintenance work was conducted during the 2022 period.

g) A summary of activities conducted in accordance with the approved **Waste Management Plan**, required in Part D, Item 3 of this Licence, undertaken during the previous calendar year, including:

- i. A summary of updates or changes to the process or facilities required for the management of Waste;

No updates or changes were required to waste management processes or facilities.

ii. The monthly and annual quantities in cubic metres of non-hazardous and hazardous



*Waste(s) generated and managed during Remediation Activities;*

The project is in the pre-remediation phase and no remediation activities were conducted.

*iii. The monthly and annual quantities in cubic metres of all Waste deposited, identified by location;*

No waste was deposited during the 2022 period.

*iv. Monthly and annual quantities in cubic metres of all liquid Waste deposited, identified by location;*

No liquid waste was deposited as no field camp was active during the 2022 period.

*v. Monthly and annual quantities and geochemical characteristics of all PAG and Metal Leaching Waste Rock, Tailings, soils and any other Mineral Materials deposited/managed, identified by location;*

No PAG or Metal Leaching Waste Rock, Tailings, soils or any other Mineral Materials were deposited or managed during the 2022 period.

*vi. The estimated monthly and annual quantities in cubic meters of Sewage deposited into the Sewage Disposal Facilities;*

No sewage was deposited as no field camp was active during the 2022 period.

*vii. Monthly and annual quantities in cubic metres of Sewage Discharged from the Sewage Disposal Facilities, identified by disposal location;*

No sewage was discharged as no field camp was active during the 2022 period.

*viii. Monthly and annual quantities in cubic metres of Wastewater Discharged from the Process Water Treatment Facilities, identified by disposal location; and*

In the absence of active remediation, no process water was generated during the 2022 period.

*ix. Any other item as directed by the Board.*



No further requests have been received.

- h) A summary of activities conducted in accordance with the approved **Sediment and Erosion Control Plan**, as required in Part D, Item 5 of this Licence, including;*
- i. A description of any erosion susceptible areas encountered, and a summary of activities undertaken to prevent or mitigate erosion;*
  - ii. A report of the performance of erosion mitigations applied in previous years, if applicable; and*
  - iii. Any other item as directed by the Board.*

As indicated in the Water Licence, the Sediment and Erosion Control Plan is not required to be submitted to the SLWB until “60 days prior to the commencement of Remediation activities”. Consequently, this Plan has not yet been developed and this requirement does not yet apply. However, there were no areas of increased erosion or changing ground conditions noted during the 2022 field programs. Similarly, no previous erosion mitigations have been applied which would require performance monitoring.

- i) A summary of activities conducted in accordance with the approved **Landfarm Management Plan**, required in Part D, Item 7 of this Licence, undertaken during the previous calendar year, including:*
- i. A summary of updates or changes to the process or facilities required for the treatment of PHC contaminated soil and rock;*
  - ii. The monthly and annual quantities in cubic metres of PHC contaminated soil and rock placed in the Landfarms;*
  - iii. The monthly and annual quantities in cubic metres of PHC contaminated Groundwater and free-phase product removed and a description of how this material was managed; and*
  - iv. Any other item as directed by the Board.*

As indicated in the Water Licence, the Landfarm Management Plan is not required to be submitted to the SLWB until “60 days prior to Landfarm Construction”. These facilities have not been constructed, the Landfarm Management Plan not yet developed, and there were no soil treatment activities during the 2022 period.

- j) A summary of activities conducted in accordance with the approved **Sediment and Erosion Control Plan**, as required in Part D, Item 5 of this Licence, including;*
- i. A description of any erosion susceptible areas encountered, and a summary of activities undertaken to prevent or mitigate erosion;*
  - ii. A report of the performance of erosion mitigations applied in previous years, if applicable; and*
  - iii. Any other item as directed by the Board.*

This requirement is a duplicate of Schedule 1, Part B, Item h. As discussed above, this requirement is not yet applicable.



- k) *A summary of activities conducted in accordance with the approved **Spill Contingency Plan** required in Part G of this Licence, undertaken during the previous calendar year, including:*
- i. *A list of all Unauthorized Discharges that occurred during the previous calendar year, including the date, NWT spill number, volume, location, summary of the circumstances and follow-up actions taken and status (i.e. open or closed), in accordance with the reporting requirements in Part G of this Licence; and*

No Unauthorized Discharges occurred during the 2022 period.

- ii. *An outline of any spill training and communication exercises carried out during the previous calendar year.*

No spill training was conducted in 2022 as there were not site activities beyond a Water Quality Monitoring Program.

- l) *A summary of all results in accordance with the approved **Geochemical Verification Program**, referred to under Part D, Item 8 and Schedule 2, Item 3 of this Licence;*

As indicated in the Water Licence, the Geochemical Verification Program is required to be submitted to the SLWB “90 days prior to the commencement of Remediation”. Consequently, this Plan has not yet been developed and this requirement does not yet apply. There were no geochemical verification activities implemented in the 2022 period.

- m) *A summary of all results in accordance with the approved **Pre-Construction Monitoring Plan**, referred to under Part D, Item 12 of this Licence;*

It is noted that Part D, Item 12 of the Water Licence refers to the Post-Construction Monitoring Plan, and the Pre-Construction/Remediation Monitoring Plan is instead referenced in Part D, Item 9. It is assumed that this request is in reference to the Pre-Construction (or Remediation) Monitoring Plan.

The GBL Sites Pre-Remediation Monitoring Plan was submitted to the SLWB on June 29, 2018. On July 3, 2018 CIRNAC was provided notification that the SLWB approved the Pre-Remediation Monitoring Plan.

The Pre-Remediation Monitoring Plan includes prescribed sampling stations/parameters, as well as provision for “Responsive Monitoring” to address any concerns or questions from previous monitoring events. On August 5, 2022 the SLWB was notified of the stations to be included as part of the 2022 monitoring activities, including the responsive monitoring stations.



#### Additional/Responsive sampling stations included:

GBL Site	Station	Location	Analyses	Rationale
Smallwood Mine	SM-1	Smallwood Lake - shoreline adjacent to waste rock	General Chemistry, Total Metals, Dissolved Metals, and PHCs	Baseline and remedial design support
	SM-2	Smallwood Lake - shoreline by the dock	General Chemistry, Total Metals, Dissolved Metals, and PHCs	Baseline and remedial design support
	SM-6 A&B	Smallwood Lake - downgradient of waste rock	General Chemistry, Total Metals, Dissolved Metals, and PHCs	Baseline and remedial design support

In 2022, responsive monitoring included sampling three previously established stations within Smallwood Lake at the Smallwood Mine. This was conducted to confirm 2017 and 2018 results of cadmium and zinc, which were higher than documented in earlier sampling events

The Pre-Remediation Monitoring Plan, with the responsive monitoring stations, was successfully implemented August 5 to 11, 2022. The associated Great Bear Lake Sites 2022 Water Quality Monitoring Report is provided as Appendix C of this report. The principal findings are as follows:

- All parameters at background stations met applicable Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life (CWQG-PAL) guidelines, except for fluoride in R-2 and R-3, which is attributed to regionally high concentrations of fluorine containing minerals. Relevant for ongoing evaluation of fluoride concentrations at Silver Bear Mine sites.

#### At Terra Mine

- Fluoride concentrations in T-8 (Ho Hum TCA) were approximately 5x higher than Camsell River background levels, but within historical ranges. High fluoride concentrations are likely due to mining and milling activities concentrating local mineralogical effects
- Arsenic and copper concentrations in T-8 exceeded CWQG-PAL guidelines, but remained below the water licence EQC. The comparison between 2021 and 2022 water quality data indicated consistent or slightly increased arsenic and copper concentrations at T-8.
- Total aluminum and iron in T-10 decreased in comparison to 2021 and were below the CWQG-PAL guidelines.
- Long-term water quality data (2002-2022) indicated that arsenic concentrations in the Ho-Hum Tailings Containment Area (TCA) decreased over time. Total copper concentrations in Ho-Hum TCA were generally stable or slightly increasing over time
- Total arsenic and copper concentrations at T-10 were approximately 4x or and 1.5x lower than concentrations in 2021, respectively. Metal concentrations at T-10 met all applicable CWQG-PAL guidelines and were generally consistent with Camsell River background conditions downstream of the wetland area in Moose Bay.

#### At Northrim Mine

- Similar to previous years, copper and arsenic concentration at NO-7 in Hermandy





Lake marginally exceeded the CWQG-PAL guidelines, due to the submerged tailings in Hermandy Lake TCA. Lead concentration decreased 10x in 2022 and met the CWQG-PAL guidelines.

- Similar to previous years, fluoride concentration at NO-6 was marginally above CWQG-PAL of 0.12 mg/L but were within the Silver Bear Mine regional background ranges (i.e., 0.15 mg/L), and not related to contaminant impact. Fluoride concentration at NO-7 was marginally below CWQG-PAL.
- At NO-6, the discharge location of the Hermandy drainage to Camsell River (i.e., receiving environment), all metals were below CWQG-PAL guidelines, including arsenic and copper.
- Total arsenic, lead, and zinc concentrations in 2022 were slightly than those in 2021 at NO-6 and NO-7, and were still within their historical ranges.
- Water quality at NO-6 is consistent with Camsell River background ranges, indicating minimum or no impact from the Northrim mine area.

#### At Norex Mine

- Water quality at NX-3 had lower conductivity, hardness, TDS, and sulphate concentrations as compared to previous years.
- Fluoride concentrations in NX-3 and NX-12 were above the CWQG-PAL guidelines; at NX-12, fluoride concentration was within its historical ranges and consistent with Camsell River background concentrations. At NX-12. Fluoride concentration was approximately 1.3x higher than reported in 2021 and in range with reported in 2017, 2018, and 2019.
- Total arsenic concentration at NX-3 reached 531 µg/L, which exceeded the CWQG-PAL and was approximately 10 to 20 times higher than concentrations reported in 2016 and 2019 and 1.2 times higher than reported in 2021.
- Total aluminum, and cadmium concentrations at NX-3 increased from 2021, and exceeded the CWQG-PAL guidelines.
- Cadmium and zinc concentrations at NX-3 decreased from 2021 and were below CWQG-PAL guidelines. It is likely that elevated concentrations in 2021 were due to enrichment of metal concentrations because of lower water volumes and potential sediment entrainment of metal, which was not applicable in 2022.
- Similar to 2018, 2019, 2020, and 2021, all PHC and BTEX samples from NX-3 and NX-12 were below detection limits.

#### At Contact Lake

- Similar to previous years, fluoride concentrations in tailings pond (CL-3) exceeded the CWQG-PAL. Fluoride concentrations in CL-3 have continued to slowly decrease since 2016 and slightly increased in 2022.
- Similar to previous years, total arsenic, copper and uranium concentrations in the tailings pond CL-3 were consistently above the CWQG-PAL guidelines and generally one to two orders of magnitude higher than Contact Lake background ranges.
- Similar to previous years, Tailings pond CL-3 reported detectable Ra-226 concentrations, but within its historic range and below CGDWQ guidelines.
- Metal concentrations in CL-26 were generally stable and consistent with the background conditions. All metal concentrations met the CWQG-PAL guidelines, which is consistent with previous sampling events.





#### At Smallwood Mine

- The 2022 dissolved zinc concentration at SM-1 and SM-2 was 25.5 µg/L and 44.5 µg/L, respectively, which was higher than the calculated guidelines of 16 µg/L. In 2022, total zinc concentrations slightly increased compared to 2021, but remained below 60 µg/L.

HISTORIC CONTEXT: Total zinc concentrations in SM-1 were below 20 µg/L before 2009 and increased significantly to 82.7 µg/L during the 2017 sampling event. In 2018, 2020, and 2021, total zinc concentrations remained below 60 µg/L and no increasing trend was observed during this period. No samples were collected in Smallwood Lake in 2019.

- Total zinc concentrations in SM-6A and SM-6B (offshore in Smallwood Lake) were lower than samples collected closest to the waste pile (SM-1), but consistently higher than background conditions. Total zinc concentrations in SM-2 (nearshore) were marginally higher than that in SM-1.

HISTORICAL CONTEXT: Total zinc concentrations at SM-6A, the surface sample at this location, were relatively stable between 2005 and 2009, but exhibited an increasing trend between 2016 and 2020, from 11 µg/L to 23.6 µg/L, and then decreased to 14.9 µg/L in 2021 and later increased to 49.8 µg/L in 2022.

The Pre-Remediation Monitoring Plan employed the quality assurance and quality control procedures outlined in the revised Great Bear Lake Sites – Quality Assurance and Quality Control Plan (V2 dated April 30, 2018). The plan was first submitted on August 11, 2017 and was provided with interim approval. Following SLWB distribution and review, the plan was revised and resubmitted on April 30, 2018. The SLWB provided notification to CIRNAC on May 30, 2018 that the revised plan was approved.

*n) A summary of all monitoring results and any Action Level exceedances in accordance with the approved **Construction Monitoring Plan**, referred to under Part D, Item 11 and Schedule 2, Item 4 of this Licence;*

As indicated in the Water Licence, the Construction Monitoring Plan is required to be submitted to the SLWB Board “90 days prior to the commencement of Remediation”. The site is currently in pre-remediation (i.e. there were no construction activities) and this plan has not yet been developed.

*o) A summary of all monitoring results and Action Level exceedances in accordance with the approved **Post-Construction Monitoring Plan**, referred to under Part D, Item 13 and Schedule 2, Item 6 of this Licence;*

As indicated in the Water Licence, the Post-Construction Monitoring Plan is required to be submitted to the SLWB “90 days prior to demobilization”. The site is currently in pre-remediation (i.e. there were no post-construction activities) and this plan has not yet been developed.



- q) *A summary of activities conducted in accordance with the approved **Remedial Action Plans** undertaken during the previous calendar year, including;*
- i. *A summary of all Remediation and reclamation activities carried out at each site during the previous calendar year, as they relate to Water Use and Waste Disposal including progress made to develop the schedule for Phase II implementation,*
  - ii. *A summary of updates or changes to the process or facilities required for the management of Waste Rock and Tailings;*
  - iii. *The monthly and annual quantities in cubic metres of excavated Tailings for placement into Landfills and any excavation contingency measures implemented;*
  - iv. *The monthly and annual quantities in cubic metres of PAG Waste Rock excavated and deposited into trenches or adits;*
  - v. *The monthly and annual quantities in cubic metres of soil and rock placed below Waste Rock Covers, placed above Waste Rock Covers, and used elsewhere on site;*
  - vi. *Any geochemical inspection reports, as appendices to the Annual Water Licence Report;*
  - viii. *A camp set-up schematic;*
  - viii. *An outline of anticipated activities for the next year; and*
  - ix. *Any other item as directed by the Board.*

The GBL Sites are currently in pre-remediation and no activities related to the Remedial Action Plans were implemented during the 2022 period.

- r) *Any other details on Water Use or Waste disposal requested by the Board by November 30 of the year being reported;*

CIRNAC is not aware of any other information requests from the Board.

- s) *Tabular summaries of all data and information generated under the Surveillance Network Program and graphical summaries of parameters with effluent quality criteria referred to in Part D, and the points of compliance (SNP Stations-001 (1), (2), (3), S17L8-002 (14I), (7A) and 7 (B), in excel or an electronic and printed format acceptable to the Board. The Licensee shall provide raw data in electronic form to the Board.*

The sampling requirements of the SNP were successfully implemented during the 2022 field program. SNP sampling was integrated with the larger pre-remediation water quality monitoring program. Results from both programs are included in the 2022 Water Quality Monitoring Report provided in Appendix A of this water licence report. The 2022 Water Quality Monitoring report includes multi-year graphical summaries of applicable results, description of monitoring approach/methodologies, quality assurance and quality control (QA/QC) procedures/findings, field measurements/photographs and recommendations.

Appendix B of the 2022 Water Quality Monitoring Report includes tabular summaries of all 2022 SNP monitoring data. As part of this submission, the SLWB will also be provided with an Excel file of all 2022 SNP data.



## 2022 SNP Sampling and Data

Currently in pre-remediation, many of the stations listed in the SNP are not yet active. This includes stations associated with discrete remedial activities (e.g. soil treatment areas, process water generation) and the operation of a remediation camp. For clarity, each of the SNP stations within Water Licence S17L8-002 is discussed below, including sampling rationale and results where applicable.

### SNP Station S15L8-001 (1)

- Water Licence Description: Treated Sewage effluent prior to Discharge
- Water Licence Location: Camp Operations
- 2022 Sampling Rationale: Not sampled. Remediation camp and sewage treatment facility not yet constructed.

### SNP Station S15L8-001 (2)

- Water Licence Description: Treated grey water prior to disposal
- Water Licence Location: Camp Operations
- 2022 Sampling Rationale: Not sampled. Remediation camp and grey water treatment facility not yet constructed.

### SNP Station S15L8-001 (3 a, b, c, d....)

- Water Licence Description: Treated Process Water prior to disposal
- Water Licence Location: Camp Operations
- 2022 Sampling Rationale: Not sampled. No remediation activities conducted or process water generated.

### SNP Station S15L8-001 (4)

- Water Licence Description: Camsell River Intake
- Water Licence Location: Camp Operations
- 2022 Sampling Rationale: Not sampled; Water Licence requires quantity measurement only.

### SNP Station S15L8-001 (5)

- Water Licence Description: Great Bear Lake Intake
- Water Licence Location: Camp Operations
- 2022 Sampling Rationale: Not sampled. Water Licence requires quantity measurement only. No water use from Great Bear Lake in 2021.

### SNP Station S17L8-002 (6)

- Water Licence Description: Contact Lake Intake
- Water Licence Location: Camp Operations
- 2022 Sampling Rationale: Not sampled. Water Licence requires quantity measurement only. No water use from Contact Lake in 2021.

### SNP Station S17L8-002 (7A)

- Water Licence Description: Ho Hum Tailings Containment Area (TCA) – Corresponding with station T-8



- Water Licence Location: Silver Bear – Terra Mine
- 2022 Sampling Rationale: Sampled once in 2022 (August) and SNP data provided in Appendix B of the 2022 Water Quality Monitoring Report, Tables B1 to B5. Multiple depth station with duplicate at surface. Complete dataset provided in Appendix D – 2022 Water Quality Monitoring Report.
- EQC Evaluation: Table B1 provides parameters as specified in the Water Licence with the EQC as indicated in Part D, Item 25. All sample results are below the EQC. Sample results are a maximum of 5% of the respective EQCs. Given the order of magnitude difference between the sample results and the EQCs, graphical summaries are not beneficial.

SNP Station S17L8-002 (7B)

- Water Licence Description: Moose Bay – Corresponding with station T-10
- Water Licence Location: Silver Bear – Terra Mine
- 2022 Sampling Rationale: Sampled once in 2022 (August) and SNP data provided in Appendix B, Table B1, of the 2022 Water Quality Monitoring Report. Complete dataset provided in Appendix D – 2022 Water Quality Monitoring Report.
- EQC Evaluation: Table B1 of the 2022 Water Quality Monitoring Report provides parameters as specified in the Water Licence with the EQC as indicated in Part D, Item 25. All sample results are below the EQC values. Sample results are a maximum of 5% of the respective EQCs. Given the order of magnitude difference between the sample results and the EQCs, graphical summaries are not beneficial.

SNP Station S17L8-002 (8C)

- Water Licence Description: Hermandy Lake – Corresponding with station NO-6
- Water Licence Location: Silver Bear – Northrim Mine
- 2022 Sampling Rationale: Sampled once in 2022 (August) and SNP data provided in Appendix B, Table B1, of the 2022 Water Quality Monitoring Report. Complete dataset provided in Appendix D – 2022 Water Quality Monitoring Report.
- EQC Evaluation: No EQC for this station.

SNP Station S17L8-002 (9D)

- Water Licence Description: Camsell River – Corresponding with station NO-7
- Water Licence Location: Silver Bear – Northrim Mine
- 2022 Sampling Rationale: Sampled once in 2022 (August) and SNP data provided in Appendix B, Table B1, of the 2022 Water Quality Monitoring Report. Complete dataset provided in Appendix D – 2022 Water Quality Monitoring Report.
- EQC Evaluation: No EQC for this station.

SNP Station S17L8-002 (10E)

- Water Licence Description: Norex Waste Rock – Corresponding with station Norex-3 (also known as NX-3)
- Water Licence Location: Silver Bear – Norex Mine
- 2022 Sampling Rationale: Sampled once in 2022 (August) and SNP data provided in Appendix B, Table B1, of the 2022 Water Quality Monitoring Report. Complete dataset provided in Appendix D – 2022 Water Quality Monitoring Report.
- EQC Evaluation: No EQC for this station.



SNP Station S17L8-002 (11F)

- Water Licence Description: Camsell River – Corresponding with station NX-12
- Water Licence Location: Silver Bear – Norex Mine
- 2022 Sampling Rationale: Sampled once in 2022 (August) and SNP data provided in Appendix B, Table B1, of the 2022 Water Quality Monitoring Report. Complete dataset provided in Appendix D – 2022 Water Quality Monitoring Report.
- EQC Evaluation: No EQC for this station.

SNP Station S17L8-002 (12G)

- Water Licence Description: Tailings Pond – Corresponding with established station CL-3
- Water Licence Location: Contact Lake Mine
- 2022 Sampling Rationale: Sampled once in 2022 (August) and SNP data provided in Appendix B, Table B1, of the 2022 Water Quality Monitoring Report. Complete dataset provided in Appendix D – 2022 Water Quality Monitoring Report.
- EQC Evaluation: No EQC for this station.

SNP Station S17L8-002 (13H)

- Water Licence Description: Contact Lake – Corresponding with established station CL-26
- Water Licence Location: Contact Lake Mine
- 2022 Sampling Rationale: Sampled once in 2022 (August) and SNP data provided in Appendix B, Table B1, of the 2022 Water Quality Monitoring Report. Complete dataset provided in Appendix D – 2022 Water Quality Monitoring Report.
- EQC Evaluation: No EQC for this station.

SNP Station S17L8-002 (14I)

- Water Licence Description: Landfarm Discharge Water
- Water Licence Location: Landfarm at Silver Bear Mines, Sawmill Bay and El Bonanza/Bonanza
- 2022 Sampling Rationale: Not sampled. Landfarms not yet constructed.

## 2022 SNP Actions

All 2022 sampling results were below respective EQCs and no response actions were required.

*t) A map depicting all the SNP Stations with GPS locations;*

Maps depicting the location of all SNP stations sampled during the 2022 season are provided in Appendix A of the 2022 Water Quality Monitoring Report. These figures include station coordinates for future reference.

It is noted that stations which are not yet active (landfarm monitoring, process water, sewage treatment discharge, etc.) are not included in the figures. The exact coordinates will be



determined during the start of active remediation and incorporated in future figures.

*u) A summary of actions taken to address concerns, non-conformances or deficiencies in any report filed by an Inspector.*

CIRNAC was not provided with an Inspection Report or any associated non-conformances/concerns.

If you have any questions or require additional information, please do not hesitate to contact myself (867-669-2423, [Joel.Gowman@rcaanc-cirnac.gc.ca](mailto:Joel.Gowman@rcaanc-cirnac.gc.ca)) or Murray Somers (867-445-2824), [murray.somers@rcaanc-cirnac.gc.ca](mailto:murray.somers@rcaanc-cirnac.gc.ca)).

Thank you,

Joel Gowman  
Project Manager, CIRNAC-CARD

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# **APPENDIX A**

## **Great Bear Lake Sites**

### **2022 Annual Water Licence Report (# S17L8-002)**





# Great Bear Lake Sites Pre-Remediation

2022 Water Quality Monitoring Program

Public Services and Procurement Canada

Project number: 60662734

March 30, 2023

## Statement of Qualifications and Limitations

The attached Report (the "Report") has been prepared by AECOM Canada Ltd. ("AECOM") for the benefit of the Client ("Client") in accordance with the agreement between AECOM and Client, including the scope of work detailed therein (the "Agreement").

The information, data, recommendations and conclusions contained in the Report (collectively, the "Information"):

- is subject to the scope, schedule, and other constraints and limitations in the Agreement and the qualifications contained in the Report (the "Limitations");
- represents AECOM's professional judgement in light of the Limitations and industry standards for the preparation of similar reports;
- may be based on information provided to AECOM which has not been independently verified;
- has not been updated since the date of issuance of the Report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued;
- must be read as a whole and sections thereof should not be read out of such context;
- was prepared for the specific purposes described in the Report and the Agreement; and
- in the case of subsurface, environmental or geotechnical conditions, may be based on limited testing and on the assumption that such conditions are uniform and not variable either geographically or over time..

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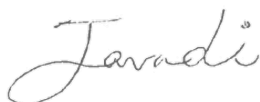
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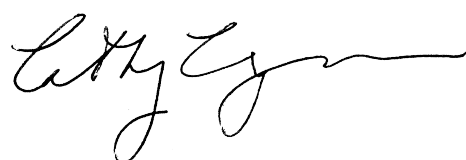
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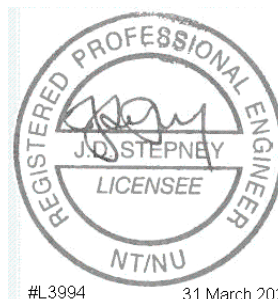
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## Revision History

Revision	Revision date	Name	Details
0	December 19, 2022	Mehrnough Javadi	Draft for Comment
1	March 9, 2023	Rebecca Hurtubise	Draft for Comment-Revision 1
2	March 30, 2023	Mehrnough Javadi	Final

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# 1. Introduction

## 1.1 Background

The Great Bear Lake (GBL) Sites refer collectively to the abandoned historic industrial properties of Silver Bear Mines (made up of the larger Terra Mine and smaller satellite sites of Northrim, Norex, Graham Vein and Smallwood mines), El Bonanza/Bonanza Mine, Contact Lake Mine and the Sawmill Bay site. The GBL Sites are located on or adjacent to the eastern shore of Great Bear Lake, within the Sahtu Region of the Northwest Territories. The properties lie within the boundaries of the Sahtu Dene and Métis Comprehensive Land Claim Agreement and a segment of the Silver Bear Mines also overlaps with the Tłıchǫ Mǫwhì Gogha Dè Nijlèè Boundary to the south. The GBL Sites are 400 to 440 kilometres (km) north-northwest of Yellowknife, 175 to 220 km north of Gamètì and 215 to 275 km east of Délı̨ne (the nearest community within the Sahtu Land Claim) (**Appendix A, Figure 1**). Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) has the responsibility to manage a number of contaminated sites in northern Canada that are no longer maintained by the original occupant. The abandoned GBL Sites are amongst these legacy properties under the custodial responsibility of CIRNAC-CARD. Under the Contaminated Sites Management Program (CSMP), the CIRNAC Contaminants and Remediation Division (CARD) intends to remediate the GBL Sites to reduce human and environmental risks.

Silver Bear Mines were underground mining properties (with a small volume of surface work), which produced primarily silver, copper and bismuth and were in operation from 1969 to 1985. The mines are located along the Camsell River, which drains to the north into Great Bear Lake. The Contact Lake Mine was significantly smaller in scale and was originally an underground silver mine during the 1930s which was also mined for uranium in 1949 to 1950. It is found along the eastern shore of Great Bear Lake near Echo Bay, with the mine site on the northeast shore of Contact Lake which drains to Conjuror Bay. El Bonanza and Bonanza Mines are both located on the Dowdell Peninsula of Great Bear Lake and were small scale silver mines operational from 1934 to 1936, 1956 to 1957, and in 1965. The Sawmill Bay Site was established as a sawmill in the 1930s, after which it was used for barging and air transportation of uranium ore from Port Radium from the 1940s to 1950. It is located along the northern section of the Leith Peninsula at the eastern edge of Great Bear Lake. It was subsequently used for various military activities in the 1950s and then as a fishing lodge from late 1950s to 1987.

Remediation of the GBL Sites was first initiated as the Phase I Remediation Project completed in 2010-2011. Efforts focused on work activities which could be completed without mobilization of heavy equipment at Contact Lake Mine, El Bonanza/Bonanza Mine and Sawmill Bay. This included drum consolidation, product consolidation and removal, building destruction (Contact Lake and El Bonanza/Bonanza mines only), and debris consolidation. This was followed by additional consolidation and removal of drums with residual fuel/product in 2016, including at the Silver Bear Mines. While these efforts reduced site risks, no earthworks or other site alterations took place during the Phase I Remediation Project and no additional activity has occurred to date at the GBL Sites which could substantially alter the receiving environment or aquatic conditions (INAC-CARD 2018c).

Remaining works needed to complete remediation of the GBL Sites is outlined in the Remedial Action Plans (RAPs) for each site and will be completed collectively as the GBL Sites Phase II Remediation Project, proposed to take place over a five-year period. This will include completion of earthworks at Contact Lake Mine, El Bonanza/Bonanza Mine and Sawmill Bay, as well as the comprehensive remediation of the Silver Bear Mines (INAC-CARD 2018c). The Great Bear Lake Sites Remediation Project obtained an approved Land Use Permit (S17D-003) in May 2017 and a Water Licence (S17L8-002) in October 2017 from the Sahtu Land and Water Board (SLWB).

## 1.2 2022 Water Quality Monitoring Program Overview

Water quality assessment and monitoring at the GBL sites has been conducted since the early 1990s, through which an extensive water quality database has been compiled. The water quality data sets and monitoring results for the GBL Sites continue to be evaluated for changes in water chemistry over time. The scope of work and methodologies implemented in 2022 followed those presented within the *GBL Sites Pre-Remediation Monitoring Plan* (PRMP), dated June 28, 2018, which was approved by the Sahtu Land and Water Board (SLWB) (INAC-CARD 2018c). Requirements of the PRMP were outlined within the renewed Project Water Licence S17L8-002 ("Admin Amend" version dated October 30, 2017) and it serves as the principal guidance document for implementing water quality monitoring prior to the commencement of the Phase II Remediation Project. As provided in the PRMP, the scope of the monitoring activities includes prescribed stations as well as responsive monitoring stations to address specific questions/concerns from ongoing sampling. On August 5, 2022, the SLWB was notified of the stations to be included as part of the 2022 monitoring activities, including the responsive monitoring stations.

The program was implemented on behalf of CIRNAC-CARD by AECOM Canada Ltd. (AECOM) and community members from Délı̨nę. Public health and safety concerns related to the pandemic presented challenges and limitations for implementing the remote field program. The field program operated between August 5 and 11, 2022. In keeping with the PRMP and the 2022 Responsive Monitoring program, samples and field measurements were collected at the Silver Bear Mines (Terra, Northrim, Norex and Smallwood Lake) and Contact Lake Mine. No sampling was required at El Bonanza/Bonanza Mine or Sawmill Bay.

Samples were submitted to ALS Environmental Laboratories (ALS) and Taiga Environmental Laboratory (Taiga) for analysis. Taiga was used for the 2019 program and a provision for its use was included in the *Great Bear Lake Sites - Quality Assurance and Quality Control Plan* (INAC-CARD 2018b). Similar to 2021, in 2022, Taiga Environmental Laboratory was used for analysis of nitrate and nitrite to meet turn around times required for these parameters. ALS Laboratories was selected for delivering all other analytes including radionuclides for the 2022 water quality monitoring program. ALS was used for the 2017, 2018 and 2020 GBL Sites Water Quality Monitoring Programs, as well as for the analysis of a subset of samples from the 2019 and 2021 water quality program. ALS Laboratories in Yellowknife submitted select subsamples to ALS Laboratories in Edmonton, Alberta, and Saskatchewan Research Council Environmental Analytical Laboratories (radionuclides) in order to achieve all required analytes with the necessary detection limits.

Upon completion of the field program, field observations and data were integrated with results of laboratory analyses. The contents of this GBL Sites 2022 Water Quality Monitoring Report have been designed to meet the reporting requirements as outlined in the PRMP. As per the requirements of the most recent Water Licence (S17L8-002, amended October 30, 2017), a *Baseline Water Quality Monitoring Report* will be produced at least six months prior to remediation which synthesizes the 2022 results along with previous monitoring data to complete multi-year spatial and temporal trend analysis. While statistical analysis was not to be included within the 2022 data report, for the primary parameters of concern a summary level comparison of current and previous results was conducted. The 2022 water sampling activities also met the requirements of the *GBL Sites QA/QC Plan*. This plan was approved by the SLWB on May 30, 2018, and outlines the sampling methodologies and testing requirements to evaluate the reliability of analytical data.

## 2. Regulatory Considerations

### 2.1 Water Licence Effluent Quality Criteria

Water Licence S17L8-002 outlines the requirements of the site-specific Surveillance Network Program (SNP) for the GBL Site Remediation Project, including monitoring stations, analytical parameters, and sampling frequency. The location and parameters of the SNP stations were selected based on future remedial activities which have the potential for effects (e.g., landfills, material processing), and at areas of known impacts to water quality, such as tailings storage areas and waste rock seepage points. To further understand water quality changes in these areas, the SNP Program also includes downstream stations in receiving waters. The design of the SNP Program makes these stations the most appropriate and conservative locations to monitor site conditions during pre-remediation.

During the pre-remediation stage there are no active waste discharges or similar site activities. Nonetheless, CIRNAC has committed to perform annual monitoring at SNP stations where there is passive drainage (e.g., waste rock seepage, tailings ponds), as well as the SNP stations in the downstream aquatic receiving environments (INAC-CARD 2018c).

Water Licence S17L8-002 includes Effluent Quality Criteria (EQC) for several stations within the associated SNP. The station specific EQC's for most SNP stations will only apply during and after site remediation. However, at Terra Mine, the Ho-Hum Tailings Containment Area (TCA) station T-8 (corresponding with SNP station S17L8-002(7A)) and the downstream station T-10 within Moose Bay (corresponding to SNP station S18L8-002(7B)), are active and currently have the following EQCs as stipulated by the Water Licence.

- Part D, Item 25 – Ho-Hum Wetland TCA to Moose Bay Waste discharge (SNP S17L8-002(7A) and S18L8-002(7B))

Parameter	Maximum Grab Concentration
Aluminum (total)	0.8 mg/L
Arsenic (total)	1 mg/L (7A) / 0.2 mg/L(7B)
Copper (total)	0.02 mg/L
Lead (total)	0.02 mg/L
Nickel (total)	0.1 mg/L
Silver (total)	0.004 mg/L
Zinc (total)	0.04 mg/L
Ammonia as N	10 mg/L
Nitrate as N	10 mg/L
Nitrite as N	0.8 mg/L
Total Suspended Solids	30 mg/L
Oil and Grease	5 mg/L (non-visible)

## 2.2 Reference or Background Conditions

Water quality conditions at background or reference stations have been evaluated as part of the preliminary work underway to prepare the *GBL Water Quality Baseline Report*. These stations are located upstream of historic site operations within the same watershed, as well as at “reference lakes” that are further away from the site but still within the general project area (e.g., Contact Lake and El Bonanza are approximately 11 km apart and share the same reference lake stations). The water quality results from evaluation of the reference and background conditions indicated that metal concentrations are naturally elevated in surrounding waterbodies. For the purposes of this report, the historical background water quality results are used as the primary benchmark for comparing water quality and evaluating changes in water chemistry at the GBL Sites.

During the 2022 site visit, background water samples were collected at R-2, R-3, and CL-8, as prescribed in the GBL Sites PRMP. Water quality at R-2 is representative of the background Camsell River. R-3 is located at Tutcho Lake, and more representative of the background lake conditions. CL-8 is considered to represent the background condition for the Contact Lake Mine site.

The background station locations are presented in **Appendix A, Figures 2 and 3**. Results of background and reference station sampling has been incorporated in the data tables found in **Appendix B**.

## 2.3 Federal Water Quality Guidelines

The Northwest Territories do not have territorial water quality guidelines for the aquatic environment, however at the federal level, the Canadian Council for Ministers of the Environment (CCME) have developed the Canadian Water Quality Guidelines for the Protection of Aquatic Life (CWQGs-PAL), both for the freshwater and marine environments. The federal water quality guidelines represent, “nationally approved limits of substances and other attributes (such as pH and temperature) in the water column where no adverse toxic effects are expected to aquatic plants and animals” (CCME 1999). These guidelines are generic national recommendations and meant to “protect all forms of aquatic life and all aspects of the aquatic life cycles, including the most sensitive life stage of the most sensitive species over the long term”. As noted, the CWQGs-PAL are generic guidelines that provide protection to the most sensitive species and do not follow a site-specific ecological risk-based approach.

Over the years of water quality monitoring at the GBL Sites, the CWQG-PAL guidelines have been used as a data evaluation threshold to identify the potential for aquatic impacts. Specifically, the Freshwater Aquatic Guidelines (FAL) for long-term exposure were applied to samples from waterbodies where aquatic life was present. These guidelines are applied as a conservative screening tool to identify potentially elevated concentrations of water quality parameters and do not indicate a threshold for aquatic effects.

### 3. Previous Water Quality Monitoring Activities

#### 3.1 Previous Monitoring at the GBL Sites

Assessment of water quality at the GBL Sites started in 1992. A list of the historical reports that include water quality assessment and monitoring data is provided in **Table 3-1** below. Since 2018, the monitoring program was conducted as outlined in the approved *GBL* PRMP and SNP program under the Water Licence (S17L8-002). The approved PRMP serves as the principal guidance for implementation of water quality monitoring up until the commencement of the Phase II GBL Sites Remediation Project. As provided in the PRMP, the scope of the monitoring activities includes prescribed SNP and Reference stations, as well as inclusion of responsive monitoring stations to address specific questions and concerns from ongoing sampling (INAC-CARD 2018c).

The collective monitoring and assessment programs have helped to identify aquatic concerns at the project sites and characterize the nature and extent of contaminant sources. The results of these assessment and monitoring campaigns have informed remedial decision making, provided baseline water quality characterization, and have been incorporated into on-going monitoring to ensure pre-remediation site conditions remain stable and remedial assumptions continue to hold true.

**Table 3-1. List of GBL Water Quality Assessment and Monitoring Reports (taken from Table 1 in INAC-CARD 2018a)**

Year	Report Name	Author
1992	Environmental Assessment and Reclamation Options for Abandoned Mines in the Northwest Territories (Mine Sites in the Camsell River Area)	EBA Engineering Consultants Ltd.
1993	Site Characterization and Environmental Assessment of Seven Abandoned Mine Sites in the Northwest Territories, Volume 1 - Environmental Assessment Summary Report	EBA Engineering Consultants Ltd.
1993	Environmental Assessment of the Abandoned Contact Lake Mine Site. Prepared for Public Works Canada, Architecture and Engineering Services Architecture and Engineering Services Branch	EBA Engineering Consultants Ltd.
1997	1996 AES Abandoned Mine Assessments Volume II	Vista Engineering
2005	Silver Bear Mine Sites, Northwest Territories Water Quality Monitoring Program. Final Report 2002 to 2004.	INAC Water Resources Division
2005	Aquatic Pre-Remediation Studies 2004, Silver Bear Mines	Rescan Environmental Services Ltd.
2005	Enhanced Phase I Environmental Site Assessment (El Bonanza Mine).	Golder Associates Ltd.
2006	Summary Report Update: 2005 Monitoring Data for Contact Lake Mine.	INAC Water Resources Division
2006	Silver Bear Mine Sites, Northwest Territories, Hydrologic Monitoring Program	INAC Water Resources Division
2006	Silver Bear Mine Sites, Northwest Territories, Water Quality Monitoring Program	INAC Water Resources Division
2006	Phase I, II, and III Investigations of the Historic Northern Uranium Transportation Network in the Northwest Territories and Northern Alberta	SRK Consulting (Canada) Inc
2006	Contact Lake Mine Site Assessment Report on July 2006 Field Activities and Follow-Up Site Assessment	SENES Consultants Ltd.
2007	Silver Bear Mine Sites, Northwest Territories, 2006 Hydrologic Monitoring Program	INAC Water Resources Division
2007	Silver Bear Mine Sites, Northwest Territories, 2006 Water Quality Monitoring Program	INAC Water Resources Division
2007	Contact Lake Mine Site Assessment Report on July 2006 Field Activities and Follow-Up Site Assessment	SENES Consultants Ltd.

Year	Report Name	Author
2007	El Bonanza Mine - Report on July 2006 Field Activities and Follow-Up Site Assessment	SENES Consultants Ltd.
2007	Phase III A Environmental Site Assessment, Sawmill Bay - SM 204, Northwest Territories, prepared by Franz Environmental Inc., 2007	FRANZ Environmental Inc. and EcoMetrix Incorporated
2007	Contact Lake Mine Supplemental 2007 Site Assessment - June 2007 Field Activities and Follow-Up Site Assessment	SENES Consultants Ltd.
2007	El Bonanza Mine Supplemental 2007 Site Assessment - June 2007 Field Activities and Follow-Up Site Assessment	SENES Consultants Ltd.
2008	Silver Bear Mine Sites, Northwest Territories, 2007 Hydrologic Monitoring Program	INAC Water Resources Division
2008	Silver Bear Mine Sites, Northwest Territories, 2007 Water Quality Monitoring Program	INAC Water Resources Division
2008	Detailed Environmental Site Assessment, Sawmill Bay, Northwest Territories NM-180	FRANZ Environmental Inc. and EcoMetrix Incorporated
2009	Silver Bear Mine Sites, Northwest Territories, 2008 Water Quality Monitoring Program	INAC Water Resources Division
2009	Silver Bear Mine Sites, Northwest Territories, 2008 Hydrologic Monitoring Program	INAC Water Resources Division
2009	El Bonanza Mine Supplemental 2008 Site Assessment - June 2008 Field Activities and Follow-Up Site Assessment	SENES Consultants Ltd.
2009	Contact Lake Supplemental Site Assessment - Report on June 2008 Field Activities and Follow-Up Site Assessment	SENES Consultants Ltd.
2010	Silver Bear Mine Sites, Northwest Territories, 2009 Hydrologic Monitoring Program	INAC Water Resources Division
2010	Silver Bear Mine Sites, Northwest Territories, 2009 Water Quality Monitoring Program	INAC Water Resources Division
2010	Great Bear Lake Sites 2009 Baseline Monitoring Program.	SENES Consultants Ltd.
2014	Silver Bear Mine Sites, Northwest Territories, 2013 Water Quality Monitoring Program	AANDC Water Resources Division
2016	2015 Water Quality Monitoring of Terra Mine	Arcadis Canada Inc.
2018	2016 Water Quality Monitoring Report at the Great Bear Lake Sites - Final Report (Updated 2018)	SLR Consulting (Canada) Ltd.
2018	Great Bear Lake Sites 2017 Water Quality Monitoring Report – Final	DXB Projects Inc.
2019	Great Bear Lake Sites – 2018 Annual Water Licence Report (Licence #S17L8-002)	CIRNAC - CARD
2020	Great Bear Lake Sites Pre-Remediation 2020 Water Quality Monitoring Report – Final	AECOM
2021	Great Bear Lake Sites Pre-Remediation 2021 Water Quality Monitoring Report – Final	AECOM



## 3.2 Monitoring Objectives

Based on the previous documents, regulatory considerations, and the pre-remediation status of the GBL sites, the following general monitoring objectives have formed the basis of the PRMP and 2022 monitoring:

- Meet the requirements of the Water Licence Surveillance Network Program (SNP) at the project sites, including compliance with the most recent Quality Assurance and Quality Control Plan (INAC-CARD 2018b).
- Respond to any anomalous data with increased sampling.
- Provide data which may be synthesized with previous findings to understand any trends in water quality.
- Compare water quality with the existing condition and detect changes in water chemistry, if any.

## 3.3 Sampling Scope

To meet the objectives, the 2022 monitoring plan directly followed the sampling scope as identified in the PRMP (INAC-CARD 2018c). The prescribed stations are identified in **Table 3-2** below.

As identified in the GBL Sites PRMP, additional monitoring stations were to be added based on any anomalous results or indication of increasing concentrations from the previous year's monitoring. Anomalous data during the pre-remediation monitoring period could be any result above the CWQGs or background concentration for a parameter not previously identified as a constituent of concern (COC) for the site or a change in concentration for a parameter at a site that is outside the range of historical results. In 2020, responsive monitoring included sampling three previously established stations within Smallwood Lake at the Smallwood Mine. This was conducted to confirm 2017 and 2018 results of cadmium and zinc, which were higher than documented in earlier sampling events. These stations were incorporated into the 2020 water quality sampling stations and continued to be monitored in 2021 and 2022 (Table 3-2).

While no responsive stations were recommended based on changing contaminant conditions, the *GBL Sites 2019 Water Quality Monitoring Report* (CIRNAC-CARD 2020) presented two recommendations to allow for flexibility in SNP sampling locations. One recommendation was to use CL-29 as a contingency for the Contact Lake Mine Tailings Pond station CL-3 given unreliable access to the shoreline depending on site conditions, and the other was to use NX-1 or NX-2 as contingency locations for the Norex Mine waste rock pile station NX-3 depending on flow conditions at the toe of the waste rock pile. The alternate or contingency sampling locations for these two SNP stations were included as potential additional monitoring stations for 2022 but were not required for the 2022 field sampling program. Based on the results of multi-year water sampling programs and the absence of any associated water quality concerns at the El Bonanza/Bonanza Mine or Sawmill Bay, sampling at these sites was not required under the GBL Sites PRMP.



Table 3-2. 2022 Water Quality Sampling Stations

Site	Waterbody	Station ID	SNP Station ID	Latitude	Longitude	Water Type	Analysis	Location	Rationale
<b>Pre-Remediation Monitoring Plan (PRMP) Sampling</b>									
Terra	Ho Hum Tailings Containment Area (TCA)	T-8A	S17L8-002 (7A)	65.60387	118.13012	Aquatic	G, TM, DM, PHC, O&G	Middle of Ho-Hum TCA, at depth of 1m	SNP requirement
		T-8B						Middle of Ho-Hum TCA, at depth of 5m	
		T-8C						Middle of Ho-Hum TCA, at depth of 13m	
	Moose Bay	T-10	S17L8-002 (7B)	65.61036	118.14873	Aquatic	G, TM, DM, PHC, O&G	Moose Bay, shoreline adjacent to airstrip (halfway down)	
Northrim	Hermady Lake	NO-7	S17L8-002 (8C)	65.59757	117.98439	Aquatic	G, TM, DM, PHC	Shoreline grab sample of Hermady Lake, southeast end	
	Camsell River	NO-6	S17L8-002 (9D)	65.59551	117.98116	Aquatic	G, TM, DM, PHC	Suspected drainage entry point from Hermady Lake to Camsell River	
Norex	Waste Rock Seep	NX-3	S17L8-002 (10E)	65.5895	117.96833	Seepage	G, TM, DM, PHC	Waste rock toe drainage, west side seep	
	Camsell River	NX-12	S17L8-002 (11F)	65.59488	117.97376	Aquatic	G, TM, DM, PHC	Camsell River, downstream of the Norex drainage	
Contact Lake	Tailings Pond	CL-3	S17L8-002 (12G)	65.99088	117.80083	Surface	G, TM, DM, PHC, RAD	Outflow flowing from tailings pond to stream, south shore	
	Contact Lake	CL-26	S17L8-002 (13H)	65.98978	117.80171	Aquatic	G, TM, DM, PHC, RAD	Contact Lake, near outflow of stream from tailings pond	
Reference	Belachey Lake	R-2	NA	65.63223	117.91731	Aquatic	G, TM	Belachey Lake, upstream of Silver Bear Mines	Background of Camsell River system
	Tutcho Lake	R-3	NA	65.59494	118.15921	Aquatic	G, TM, DM	Tutcho Lake, elevated lake west of Terra Mine	Background of Tutcho Lake
	Contact Lake (far end)	CL-8	NA	66.00485	117.89067	Aquatic	G, TM, RAD	Contact Lake, north end reference station	Background of Contact Lake
QAQC	Ho Hum TCA	Duplicate of T-8A	NA	65.60387	118.13012	Aquatic	G, TM, DM, PHC, O&G	Middle of Ho-Hum TCA, at depth of 1m	QA/QC
	Tailings Pond	Duplicate of CL-3	NA	65.99088	117.80083	Surface	G, TM, DM, PHC, RAD	Outflow flowing from tailings pond to stream, south shore	
	NA	Field Blank	NA	-	-	-	G, TM, DM, PHC, O&G	Silver Bear Mine Sites, field blank	
	NA	Field Blank	NA	-	-	-	G, TM, DM, PHC, RAD	Contact Lake, field blank	
	NA	Trip Blank	NA	-	-	-	G, TM, DM, PHC, O&G, RAD	Transported to site, trip blank	

Site	Waterbody	Station ID	SNP Station ID	Latitude	Longitude	Water Type	Analysis	Location	Rationale
<b>Responsive Sampling</b>									
Smallwood Lake	Smallwood Lake	SM-1	NA	65.5813	117.94434	Aquatic	G, TM, DM, PHC	Smallwood Lake shoreline, adjacent to waste rock	Responsive Sample
		SM-2	NA	65.5813	117.94434	Aquatic	G, TM, DM, PHC	Smallwood Lake shoreline, near dock	
		SM-6A	NA	65.55815	117.94188	Aquatic	G, TM, DM, PHC	Smallwood Lake downgradient of waste rock, at surface	
		SM-6B	NA					Smallwood Lake downgradient of waste rock, at depth of 5m	

## 4. General Program Approach

### 4.1 Program Planning

AECOM completed the program with assistance/ support from Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) and the Délı̨nę Goł'ı̨nę Government (DGG) Lands Department. All activities were conducted on behalf of CIRNAC-CARD, with support and management provided by CIRNAC-CARD. Wildlife monitors were hired from the Délı̨nę community. Délı̨nę was used as a base of operations. AECOM staff and CIRNAC Staff were mobilized from Yellowknife to Délı̨nę during the field program. The crew were mobilized to site each day from Délı̨nę by float plane.

In addition to the resources of CIRNAC-CARD Project Personnel (Adriana Shuster) a team of personnel mobilized to the GBL Sites daily to implement the water sampling program. The full list of personnel which participated in field activities (water quality sampling, support, and ancillary tasks) is as follows:

- Jessica Stepney (AECOM) – Project Manager (office support)
- Chris Yukon (Sahtu De Consulting) – Camp Manager/Wildlife Monitor/Boat Operator
- Tyrone Yukon (Sahtu De Consulting) – Wildlife Monitor/Water Sampling
- Wayne Gaudet (Sahtu De Consulting) – Wildlife Monitor/Water Sampling
- Rebecca Hurtubise (AECOM) – Water Sampling
- Chris Auger (AECOM) – Water Sampling
- Personnel were selected, based on availability and necessity, to comprise the water quality team to complete the sampling plan. The team was composed of one or two specialists and one wildlife monitor/ boat operator each day.

### 4.2 Station Access

The sites were accessed daily from Délı̨nę using float-equipped fixed wing aircraft. Within each project site, transport was conducted by foot. The on-site boat near Ho Hum Lake TCA at Terra Mine was used to conduct open water sampling at Terra, while the remainder of off-shore samples were collected from the float-equipped aircraft.

### 4.3 Field Data and Observations

In addition to sample collection, in situ field data and observations were compiled to assist with the characterization of site conditions. These approaches followed guidance included in the GBL Sites PRMP and aligned with previous monitoring programs. This included measurement of toxicity modifying factors which are required to calculate applicable guidelines (e.g., Canadian Council of Ministers of the Environment (CCME) Protection of Aquatic Life (PAL) - Freshwater Aquatic Life (FAL) guidelines). The following field measurements were collected at aquatic monitoring stations: temperature, pH, dissolved oxygen, redox potential, specific conductivity, and turbidity. The water quality monitoring team used a YSI Professional Plus Multiparameter Water Quality Meter with 1 to 10 m cables for in-situ measurements at depth. These meters were provided serviced and calibrated by the respective rental companies. Field calibration was conducted daily for ongoing data quality.

On-land water sampling stations (e.g., waste rock seepage water) are characteristically of shallow water depth and are not aquatic habitat. In order to collect a representative sample for field measurements, a syringe was submerged just below surface to limit the agitation of sediment. The syringe was used to collect a sufficient volume of water in a designated bottle so that the field water quality probes were fully immersed. The field probes were allowed to equilibrate for several minutes prior to taking field measurements with the YSI water quality meter.

For open water stations, which required sampling at surface and depth, temperature measurements were collected at designated intervals, as per the sampling plan (i.e., 1 m, 4 m, 10 m). This was conducted to determine the stratification depths of the epilimnion, metalimnion or hypolimnion and for subsequent sampling in these stratifications.

Additional information recorded at each sampling station included: date/time, sample number for laboratory submission, sampling personnel, coordinates, general location description, access methodology (e.g., boat, shoreline), weather, waterbody condition, wind direction, potential contaminant sources (e.g., sheen, tailings), sampling methodology (syringe/pole/grab/column), collection depth, number of sample bottles, sample parameters and any other pertinent information.

Figures documenting sample locations are provided in **Appendix A**. Compiled field data and observations, including GPS coordinates and in situ measurements are provided in **Appendix C**. Photographic documentation of sampling stations may be found in **Appendix D**.

## 4.4 Sample Collection

The methodologies listed below meet those outlined in the PRMP and were selected for: consistency with earlier sampling programs, consideration of the receiving water body, access limitations, efficiency, and cost.

### Grab Sampling

Open water grab samples were collected by submerging bottles under the water surface. At shoreline stations, a sampling pole was used to enable collection of water samples while minimizing disruption of sediment in shallow water conditions. Similarly, when sampling shallow on-land standing water, sterile syringes were used to collect representative water samples.

### Water Column Sampling

Water column sampling was performed using a vertical Van Dorn sampler with a metered line. The apparatus was rinsed in triplicate before sample collection. Sampling was conducted at prescribed depths, including surface, mid water column and near the sediment surface.

## 4.5 Laboratory Analysis

Analytical methods employed in the 2022 water sampling program were selected to meet the requirements outlined in the PRMP (INAC-CARD 2018c). Analytical parameters in the PRMP were selected based on a) regulatory requirements of the SNP program; b) historic land use; c) terrestrial and aquatic contaminants of concern identified during site earlier aquatic monitoring; and d) recommendations within the Proposed Long-Term, Status of Environment and Construction Monitoring Plans (SENES 2009). To the extent possible, analytes were selected to be consistent with previous monitoring activities at the sites.

As indicated in the Water Licence (Annex A, Part A, Item 5), “All analyses shall be performed in a laboratory accredited by the Canadian Association for Laboratory Accreditation (CALA) for the specific analyses to be performed or as approved by an Analyst.” ALS Laboratories and Taiga were selected based on this requirement, the availability of Yellowknife services and the conditions as outlined in the *GBL Sites QA/QC Plan* (INAC-CARD 2018b). On August 5, 2022, the SLWB was notified of the selected laboratory, analytical methods, and associated detection limits. The laboratory was required to outline their specific procedures during sample collection, such as sample preservation, headspace, filtration, or refrigeration.

The laboratory parameters fall into the following categories discussed in sections below: General Chemistry, Metals, Petroleum Hydrocarbons, Radionuclides, and specific SNP Parameters.

### 4.5.1 General Chemistry

General chemistry parameters for laboratory analysis are listed below, with any parameters with CCME-FAL guidelines underlined:

Physical Parameters	Major Ions	Nutrients
Alkalinity	Calcium	<u>Ammonia (as N)</u>
Conductivity	<u>Chloride</u>	<u>Total Phosphorous</u>
<u>pH</u>	<u>Fluoride</u>	Dissolved Phosphorous
<u>Total Dissolved Solids</u>	Total Hardness	<u>Nitrate</u>
Total Suspended Solids	Magnesium	<u>Nitrite</u>
<u>Turbidity</u>	Potassium	Total Organic Carbon
	Sodium	Dissolved Organic Carbon
	Sulphate	
	Sulphide	

### 4.5.2 Metals

As former mining properties, metals are the dominant constituent of concern (COC) at the GBL Sites. The current standard for metals analysis is inductively coupled plasma-mass spectrometry (ICP-MS), which was employed for all samples. In addition to the ICP-MS element scan, mercury analysis was conducted by Cold Vapour Atomic Absorption Spectroscopy (CVAAS) or Cold Vapour Atomic Fluorescence Spectroscopy (CVAFS). Standard ICP-MS scans for metals often include parameters that have not been assigned a relevant water quality criterion (CCMEFAL or otherwise). To address the potential that water quality criteria may be developed in the future as well as the requirements of the Water Licence SNP, the following metals were included in the suite (with those parameters possessing CCME-FAL guidelines underlined):

<u>Aluminum</u>	<u>Cadmium</u>	<u>Manganese</u>	<u>Thallium</u>
Antimony	Cesium	<u>Mercury</u>	Tin
<u>Arsenic</u>	Chromium Cobalt	<u>Molybdenum</u>	Titanium
Barium	<u>Copper</u>	<u>Nickel</u>	<u>Uranium</u>
Beryllium	<u>Iron</u>	<u>Selenium</u> Silicon	Vanadium
Bismuth	<u>Lead</u>	<u>Silver</u>	<u>Zinc</u>
<u>Boron</u>	Lithium	Strontium	Zirconium

While the total metal concentration measures all physical and chemical forms of the metal present in the water sample, the dissolved concentration includes only forms of the metal that are less than 0.45 µm in size. Based on this operational definition, dissolved concentrations generally exclude particle bound metals (>0.45 µm), which are more readily removed from the water column. Dissolved metal forms are also more readily available for uptake, although uptake is ultimately determined by many factors (SENES 2007). The total metal concentrations are of greater interest as CCME-FAL water quality guidelines are generally based on total concentrations; however, determining the proportions of particulate and dissolved metal phases of the total concentration may provide insight into the ultimate fate and transport of metals in the water body. Previous monitoring at the GBL Sites has included analysis of both total and dissolved metals from many stations and the relationship between the two fractions were generally observed to be similar. Those stations identified within the PRMP were sampled for dissolved metals, including SNP stations.

To address ongoing issues with detectable levels of constituents in Field Blanks, AECOM has developed an updated approach to confirm validity of results; use of Waterra filters was discontinued and samples were filtered at the lab. In addition, the field blanks for metals were completed in duplicate using deionized water from two laboratories for 2022 to investigate potential causes of increased metals content in the field blanks.

### 4.5.3 Petroleum Hydrocarbons

Site assessment work at the GBL Sites has confirmed the presence of petroleum hydrocarbon (PHC) contamination at some locations in or near receiving waters. Remedial measures will include excavation and treatment of soils with PHC concentrations above prescribed criteria. Areas with concentrations below criteria will typically be left in place and monitored to confirm that migration to receiving waters is not occurring. Monitoring has in the past been conducted in receiving waters adjacent to locations with historic and/or residual PHC concentrations and where soil treatment areas are to be sited. An extensive number of water samples have been analyzed for PHCs and benzene, toluene, ethylbenzene, and xylenes (BTEX) at the project sites, with only a small number found to be above detection limits. As outlined in the PRMP, monitoring for PHC/BTEX will continue at these locations.

Samples collected for the purpose of PHC monitoring were analyzed for F1 to F4 hydrocarbon fractions and BTEX, as well as specific parameters as outlined in the Water Licence SNP (i.e., Oil and Grease).

### 4.5.4 Radionuclides

In addition to uranium, which was analyzed as part of the metals scan, previous monitoring activities at Contact Lake Mine have measured radium-226 and lead-210 as surrogates for a full radionuclide scan. Although the receiving waters did not have detectable concentrations of these parameters, elevated results were observed in mine drainage and groundwater monitoring wells at some locations at Contact Lake Mine.

Radionuclides have not historically been sampled or identified as a potential contaminant of concern at the Silver Bear Mine sites. Water quality monitoring for radionuclide concentrations was only recommended for Contact Lake as part of the sampling program according to the GBL Sites Pre-Remediation Monitoring Plan (PRMP).

The PRMP includes the analysis of Contact Lake stations for both radium-226 and lead-210. Contact Lake is the only location that has documented radiation concerns. Radium-226 samples were tested using gas flow proportional alpha spectrometry. Lead-210 was determined using liquid scintillation counting (LSC).

### 4.5.5 Surveillance Network Protocol Parameters

The GBL Sites 2017 Water Licence (S17L8-002) includes an expanded SNP. In addition to the assessment of general chemistry, metals, petroleum hydrocarbons and radionuclides discussed above, the SNP requires analysis of the following parameters at discrete stations:

- Cesium, Lithium and Bismuth: In addition to the standard ICP-MS element scan
- Oil and Grease: By Gravimetric Analysis
- Volatile Hydrocarbons: Head Space Trap Gas Chromatography/Flame Ionization Detector/Mass Spectrometry (HS GC/FID/MS)
- Extractable Hydrocarbons: Gas Chromatography/Flame Ionization Detector (GC/FID)
- Non-Aqueous Phase Liquid/Free Product: Visual Exam
- Phenols: By Colourimetry
- Biochemical Oxygen Demand (BOD): 5 day, Seeded Incubation
- Fecal Coliforms: Colilert-18
- Polychlorinated Biphenyls (PCBs): Gas Chromatography – Electron Capture Detection (GC-ECD)

Many of these parameters were analyzed during site characterization studies and were not a concern at the GBL Sites. Many of these parameters are specific to SNP stations which are not yet active (e.g., landfill monitoring, soil treatment monitoring).

## 4.6 Quality Assurance and Quality Control

Adherence to best practices in Quality Assurance and Quality Control (QA/QC) is a crucial element of all sampling programs and provides confidence in data collection and analysis. In keeping with this consideration and as required within the Water Licence, CIRNAC has produced a site-specific QA/QC Plan (INAC-CARD 2018b) tailored to SNP sampling at the sites. These same approaches were applied to all 2022 water sampling activities, where applicable.

As part of this process, experienced sampling personnel were a vital asset for implementing the sampling plan and facing unexpected field conditions. Notwithstanding the need to evaluate field conditions and apply additional QA/QC procedures accordingly, the following minimum QA/QC procedures were applied during sampling and analysis.

### 4.6.1 Field Sampling QA/QC

Field activities have the greatest potential to cause sample contamination and are a primary focus of QA procedures. The following QA approaches were applied during field sampling to reduce the risk of sample contamination and to ensure the reliability of data:

- Prior to sampling, all vehicles (e.g., boats, ATVs), work areas and equipment were inspected for potential contaminant sources, such as fuel leaks, fouled boat hulls or soiled sampling lines.
- All equipment used for the collection of field data (e.g., multi-meters) was calibrated per manufacturer specifications.
- As much as possible, single-use equipment and supplies were used to prevent cross contamination between sampling stations.
- Sampling equipment was an accepted brand, an approved design and, made of noncontaminating materials.
- Where possible, sampling was conducted from the area of least impact to greatest, thereby minimizing the potential for cross-contamination.
- Any water sampling apparatus used (e.g., pole, Van Dorn) was decontaminated prior to initial use and triple rinsed prior to sampling at each station.
- Sample bottles and preservatives were single-use and provided by the contract laboratory.
- All sampling and sample bottle handling were conducted wearing single-use, unpowdered, nitrile gloves, replaced at each sampling station.
- Before, during and after collection, sample bottles were kept away from contaminant sources as much as possible (e.g., fuel, dust).
- Where not pre-charged with preservatives, sample bottles were triple rinsed with the sample water prior to filling.
- Rinse water was discarded away from the sampling station, without disrupting the water column or sediments.
- Where sampling by boat, collection was conducted from the front of the boat, with rinse water discarded at the back.
- All laboratory requirements for sample preservation, headspace, etc. were adhered to.
- Samples were labelled with (at minimum) the sample identifier (i.e., SNP station), date, time, project name, requested analyte, preservative, and filtration.
- Samples were kept cool prior to and during transport to the laboratories.
- AECOM delivered the samples to the laboratory immediately (the following day after sampling) and every effort was made to enable sample analysis within recommended hold times (Analytes with short hold times were submitted to Taiga, including nitrate and nitrite).



- Hold time exceedances were documented for the following parameters: pH, total suspended solids, turbidity, total sulphide, dissolved mercury and total mercury in one or more of the sampling stations, field blank and travel blank.
- Chain of Custody forms were completed for all samples, with one copy retained and another included in sealed sample coolers.

Several standard QC approaches were used to confirm data precision and accuracy and to identify any potential field contamination:

- Duplicate samples were collected at a rate of 10% and submitted blind to the laboratory (i.e., the laboratory was not aware of which sample was duplicated).
- Field blanks (two full sets) were submitted to identify any potential contamination from the sampling procedures. Sampling methodology directly mirrored site samples (e.g., gloves, preservation); however, laboratory provided deionized water was used.
- Trip blanks were provided by the laboratory, transported to the field, and returned unopened to identify any potential contamination from transport.
- To address ongoing issues with detectable levels of constituents in Field Blanks, AECOM has developed an updated approach to confirm validity of results; use of Waterra filters was discontinued and samples were filtered at the lab. In addition, the field blanks for metals were completed in duplicate using deionized water from two laboratories for 2022 to investigate potential causes of increased metals content in the field blanks.

Evaluation of QC sample results is an important final step. Due to the natural heterogeneity of environmental media, duplicate samples generally will not correspond perfectly with the original sample. To validate the data, the relative percent difference (RPD) was calculated and evaluated. These results are presented in Section 5.0. Results of field blanks were also reviewed to confirm sample contamination was not occurring during collection, handling, or transportation.

#### 4.6.2 Laboratory QA/QC

All samples were submitted for analysis to a CALA accredited laboratory (ALS and Taiga) that has an approved QA/QC plan. Laboratory procedures included equipment calibration, Certified Reference Materials, Laboratory Duplicates, Method Blanks and Matrix Spikes. Results of these procedures are provided in the appended Laboratory Certificates (**Appendix E**). The methods applied by contract laboratories may vary; however, as part of CALA accreditation, all laboratories must meet rigorous requirements in conformance to standard methods of analysis. A description of the Laboratory QA/QC results are provided in Section 5.0.



## 5. Quality Assurance / Quality Control Sample Evaluation

In keeping with the requirements of the QA/QC Plan (INAC-CARD 2018b), duplicates, field blanks and travel blanks were collected during the 2022 monitoring program. In addition to field-based QA/QC procedures, the analytical laboratory instituted QA/QC procedures to assess and validate data. Both the field and laboratory QA/QC results are discussed below and are in keeping with the assessment methodologies presented in the site-specific QA/QC Plan (INAC-CARD 2018b) and the GBL Sites Pre-remediation Monitoring Plan (INAC-CARD 2018c).

The hold time exceedances for the water samples can affect results for some parameters more than others. TDS is not likely to be significantly affected by the delay, whereas pH and TSS may be more affected by the delay. The recommended hold time for pH measurement is 15 minutes which is not achievable in any case; therefore, field pH data is collected. Nitrate and nitrite can be affected by hold time exceedances and in 2022 the samples were submitted to Taiga to meet turn around times required for these two parameters. Total sulphide is less likely to get affected by the delay.

### 5.1 Field QA/QC

#### 5.1.1 Duplicate Evaluation

To assess the precision of sampling procedures and laboratory results, duplicate samples were collected at approximately 10% of sampling stations. During the 2022 monitoring program a total of two blind duplicate samples were collected, one at Terra Mine (T-8A (DUP) corresponding to sample T-8-A from Ho Hum TCA) and one at Contact Lake Mine (CL-3 (DUP) corresponding to sample CL-3 from the Contact Lake Tailings Pond). While duplicates were collected at the same location and using identical procedures, due to the natural heterogeneity of environmental media, duplicate samples generally will not correspond perfectly with the original sample. To validate the data, the relative percent difference (RPD) was calculated using the following equation:

$$RPD = \frac{|R_1 - R_2|}{\left[\frac{R_1 + R_2}{2}\right]} \times 100,$$

where R1 and R2 are the sample and duplicate results and  $((R_1 + R_2) / 2)$  is the mean of these values.

Evaluation of QC sample results is an important final step. As indicated in the QA/QC Section of the GBL Sites PRMP (INAC-CARD 2018c), the RPD for duplicate samples should be less than 30% for aqueous samples; however, the RPD may only be calculated where the result is detected in both the original and the duplicate sample at a concentration five times greater than the detection limit (DL). Where one or more result is less than five times the DL, alternate criteria may be applied. If both are below, the RPD may not be calculated. The evaluation criteria are provided in **Table 5-1** below. A passing rate of greater than or equal to 90% for all individual results would indicate an acceptable reliability in results (INAC-CARD 2018c).

**Table 5-1. Duplicate Evaluation Criteria**

Scenario	Result A	Result B	Criteria for Acceptance of Aqueous Samples
A	<RDL	<RDL	Acceptable Precision
B	<RDL	Positive	Result B – (0.5x RDL) <RDL
C	Positive and ≤ 5x RDL	Positive	Result B – Result A  < 2x RDL
D	Positive and >5x RDL	Positive and >5x RDL	RPD <30%

QA/QC sample and evaluation results are provided in **Appendix B, Table B-5**. A total of 226 individual results were evaluated for duplicate precision, with only eight results exceeding the acceptability criteria presented in **Table 5-1**. This represents a passing rate of 96.0% and demonstrates the high reliability of results, in exceedance of the 90% threshold. A summary of these findings are as follows:

- Total beryllium variability in sample T-8A and duplicate T-8A-DUP: No guidelines/criteria exist for beryllium, however the result for T-8A and T-8A-DUP were <5xRDL and was in excess of the 30% variation criteria with an RPD of 48%. Beryllium concentration may vary due to field conditions. The reported result was confirmed by the laboratory through review of data and instrument and method quality control.
- Total lead variability in sample T-8A and duplicate T-8A-DUP: the result for both samples were >5xRDL and was in excess of the 30% variation criteria with an RPD of 61%. The source of this metal variability is likely lack of homogeneity in samples. The reported result was confirmed by the laboratory through review of data and instrument and method quality control.
- Total thallium variability in sample T-8A and duplicate T-8A-DUP: the result for T-8A samples was <5XRDL and for T-8A-DUP samples was <DL and was in excess of the 30% variation criteria with an RPD of 89%. The source of this metal variability is likely lack of homogeneity in samples. The reported result was confirmed by the laboratory through review of data and instrument and method quality control.
- Turbidity variability in sample CL-3 and duplicate CL-3 (DUP): the result for CL-3 (DUP) was >5xRDL and was in excess of the 30% variation criteria with an RPD of 40%. The source of this turbidity variability is unclear and may vary due to field and sampling conditions. The reported result was confirmed by the laboratory through review of data and instrument and method quality control.
- Total bismuth variability in sample CL-3 and duplicate CL-3 (DUP): the result for CL-3 was <5XRDL and the result for CL-3(DUP) was <RDL and was in excess of the 30% variation criteria with an RPD of 48%. The source of this metal variability is likely lack of homogeneity. The reported result was confirmed by the laboratory through review of data and instrument and method quality control.
- Total cadmium variability in sample CL-3 and duplicate CL-3 (DUP): the result for CL-3 was <5XRDL and the result for CL-3(DUP) was positive and was in excess of the 30% variation criteria with an RPD of 98%. The source of this metal variability is likely lack of homogeneity in samples. The reported result was confirmed by the laboratory through review of data and instrument and method quality control.
- Total silver variability in sample CL-3 and duplicate CL-3 (DUP): both results were positive and >5XRDL and was in excess of the 30% variation criteria with an RPD of 79%. The source of this metal variability is likely lack of homogeneity in samples. The reported result was confirmed by the laboratory through review of data and instrument and method quality control.
- Total thallium variability in sample CL-3 and duplicate CL-3 (DUP): the result for CL-3 was <5XRDL and the result for CL-3(DUP) was positive and was in excess of the 30% variation criteria with an RPD of 95%. The source of this metal variability is likely lack of homogeneity in samples. The reported result was confirmed by the laboratory through review of data and instrument and method quality control.

### 5.1.2 Field and Travel Blanks

**Appendix B, Table B6** provides the results of field blank analysis from the 2022 monitoring program. One discrete field blank was submitted from Silver Bear Mines (SB-FB) and one field blank was submitted from Contact Lake (CL-FB). Additional samples were collected for the field blanks for metals using deionized water from Taiga [SB-FB (DUP) and CL-FB(DUP)]. These samples were handled with the same procedures as site samples but were filled with laboratory provided deionized water. A single travel blank (or trip blank) was also submitted to the laboratory. These samples were prepared by the laboratory and travelled with the field team for the duration of the field program.

Results of the travel and field blanks were assessed to identify any parameters above the DL. A total of 493 individual results were evaluated, of which 33 (6.6%) were above detection:

- Conductivity: Field Blank CL-FB reported conductivity value of 1.1 milligrams per litre (mg/L) and Travel Blank TB reported conductivity value of 1.3 mg/L. This is above the detection limit of 1.0 mg/L. The reported result was confirmed by the lab through review of data and instrument and method quality control.
- Ammonia: Travel Blank TB reported ammonia value of 0.0113 mg/L. This is above the detection limit of 0.0050 mg/L. The reported result was confirmed by the lab through review of data and instrument and method quality control.
- Turbidity: Field Blank SB-FB reported turbidity value of 0.13 NTU. This is above the detection limit of 0.10 NTU. The reported result was confirmed by the lab through review of data and instrument and method quality control.
- Total and dissolved arsenic in the Field Blank SB-FB reported concentrations of 0.00016 mg/L. This is marginally above the detection limit of 0.00010 mg/L. The reported result was confirmed by the lab through review of data and instrument and method quality control.
- Total and dissolved cadmium in the Field Blank SB-FB reported concentrations of 0.0000156 mg/L. This is above the detection limit of 0.0000050 mg/L. The reported result was confirmed by the lab through review of data and instrument and method quality control.
- Total cadmium in the Field Blank SB-FB(DUP) and CL-FB(DUP) reported concentrations of 0.0000216 mg/L and 0.0000147 mg/L respectively. This is above the detection limit of 0.0000050 mg/L. The reported result was confirmed by the lab through review of data and instrument and method quality control.
- Total and dissolved calcium in the Field Blank SB-FB reported concentrations of 0.058 mg/L. This is marginally above the detection limit of 0.050 mg/L. The reported result was confirmed by the lab through review of data and instrument and method quality control.
- Total and dissolved magnesium in the Field Blank SB-FB reported concentrations of 0.0073 mg/L. This is above the detection limit of 0.005 mg/L. The reported result was confirmed by the lab through review of data and instrument and method quality control.
- Total and dissolved manganese in the Field Blank SB-FB reported concentrations of 0.00041 mg/L. This is above the detection limit of 0.00010 mg/L. The reported result was confirmed by the lab through review of data and instrument and method quality control.
- Dissolved sodium in the Field Blanks SB-FB(DUP), CL-FB, and CL-FB(DUP) and Travel Blank TB reported concentrations of from 0.068 to 0.83 mg/L. This is higher than the detection limit of 0.050 mg/L. The reported result was confirmed by the lab through review of data and instrument and method quality control.
- Total and dissolved thallium in the Field Blank SB-FB reported concentrations of 0.000026 mg/L. Total thallium in the Field Blanks SB-FB(DUP) and CL-FB(DUP) reported concentrations of 0.000020 mg/L and 0.000015 mg/L respectively. Dissolved thallium in Field Blank SB-FB(DUP) reported concentrations of 0.000019 mg/L. This is higher than the detection limit of 0.000010 mg/L. The reported result was confirmed by the lab through review of data and instrument and method quality control.
- Total and dissolved uranium in the Field Blank SB-FB reported concentrations of 0.000014 mg/L. Total uranium in the Field Blanks SB-FB(DUP) and CL-FB(DUP) reported concentrations of 0.000018 mg/L and 0.000014 mg/L respectively. This is higher than the detection limit of 0.000010 mg/L. The reported result was confirmed by the lab through review of data and instrument and method quality control.

- Total and dissolved zinc in the Field Blank SB-FB reported concentrations of 0.0060 mg/L. Total zinc in the Field Blank SB-FB(DUP) reported concentrations of 0.0173 mg/L. This is higher than the detection limit of 0.0030 mg/L. The reported result was confirmed by the lab through review of data and instrument and method quality control.

For the 2022 sampling event, use of Waterra filters was discontinued and samples were filtered at the lab. This approach eliminates the potential contribution of filtering procedure in detectable levels in Field Blanks. Limit of Qualification (LOQ) were considered where analytical concentrations are just above the Method of Detection Limit (MDL) because analytical precision is known to be poor within five times the method of detection limit for each parameter. Although some parameters had detected concentrations in field and travel blank, all parameters were below the LOQ, except for total zinc (1 sample: Silver Bear field blank duplicate using Taiga DI water) and dissolved zinc (1 sample; Silver Bear field blank using ALS DI water). The detected total and dissolved zinc from the field blank samples suggests either localized field-level contamination, or potential contamination (bias or imprecision) introduced during the sample handling in the laboratory. The Silver Bear field blank was taken at Terra Mine. The five water samples taken at Terra Mine from Ho Hum Lake TCA and Moose Bay had concentrations of total zinc and dissolved zinc less than the concentration in the field blank (and duplicate), except for T8-B. Therefore zinc concentrations for sample T8-B should be interpreted with caution.

In terms of field-level contamination, fresh gloves were used, and the field blank containers were fully rinsed three times with the deionized water prior to getting filled with the deionized water. Additional effort should be made to reduce external sources of contamination such as contamination from hair and skin products (e.g., zinc is common in sunscreen products). In addition, a standard protocol with respect to the location for field blank collection is recommended, given the variability of field locations over which the blank is meant to represent. In terms of the travel blank and the similarly reported detected parameters issues on other recent ALS projects, an inter-laboratory quality check may also be warranted to mitigate against this issue. It is recommended to continue sourcing deionized water from multiple labs and to submit the duplicate samples to both labs (e.g., 2 samples with different deionized water sent to 2 labs for a total of 4 field blank samples) as an inter-laboratory quality check for field blanks.

## 5.2 Laboratory QA/QC

As indicated in the QA/QC Plan (INAC-CARD 2018b), samples were submitted to a laboratory accredited by the Canadian Association for Laboratory Accreditation (CALA). CALA is an internationally recognized not-for-profit accreditation body serving both public and private sector testing laboratories in Canada and abroad, providing Accreditation, Proficiency Testing and Training. Laboratory accreditation is a means of determining the technical competence of laboratories to perform specific types of testing and measurement, thereby provide formal recognition to competent laboratories. Accreditation itself is based on satisfactory participation in the site assessment program and proficiency testing. The granting and maintenance of accreditation is made by the CALA Accreditation Council on the recommendation of the CALA Advisory Panel. CALA programs are endorsed by the Canadian Council of Ministers of the Environment.

As indicated in the Laboratory Certificates provided in **Appendix E** the laboratory followed a robust QA/QC approach to verify the validity of data. This included internal duplicates, matrix spikes, laboratory control samples and certified reference materials. In keeping with QA/QC protocols, laboratories must document these findings and have met the acceptable thresholds (e.g., relative percent difference, percent recovery).

## 6. Reference Water Quality

Background or reference stations have been established to capture the natural influences of local mineralized zones. Previous monitoring at these stations has confirmed the presence of naturally elevated metal concentrations in select waterbodies at the GBL Sites (SENES 2009). Historically, water quality at stations R1, R2, R3 and R4 has been collected to represent background for the Silver Bear Mines. R-1, R-2 and R-4 are located upstream of the Silver Bear Mine sites and water quality at these stations are representative of the background conditions of the Camsell River. R-3 is located at Tutcho Lake and more representative of the background lake conditions. Local reference stations were also established in Sawmill Bay, Contact Lake, and El Bonanza Mine areas to characterize the site-specific background water quality at those sites. Existing conditions for the Silver Bear Mines background stations and the site-specific background stations are being compiled and evaluated to characterize reference water quality as part of the development of the GBL Baseline Water Quality Monitoring Report.

The GBL Pre-Remediation Monitoring Plan (PRMP) includes two background stations for the Silver Bear Mines area, R2 and R3, and one for the Contact Lake Mine site, CL-8. During the 2022 sampling event, water quality samples were collected at the Silver Bear Mines background stations R2, R3 (**Appendix A, Figure 2**) and the Contact Lake reference station CL-8 (**Appendix A, Figure 3**). Analytical water quality results for these background stations are presented in **Appendix B**. Both historical and 2022 concentrations for selected parameters (Conductivity, Fluoride, Arsenic, Copper, Cadmium, Silver, Uranium and Zinc) were plotted for these background stations to illustrate long-term water quality (**Figure 6-1 and Figure 6-2**). These parameters were selected because they are known contaminants of concern (COC) and are parameters used to provide general characterization for overall water quality. Note that some of the data points, including total silver, uranium, and zinc in **Figure 6-1 and Figure 6-2** may have concentrations below the detection limit and get masked by other data points.

### 6.1 Silver Bear Mines Background Water Quality Results

The evaluation of historical results from reference stations indicated that the Camsell River background water quality is characterized as circumneutral to slightly alkaline pH (7.69 – 8.07), low TSS (<3 mg/L), low sulphate (<15 mg/L) and slightly elevated conductivity (101-160  $\mu\text{S}/\text{cm}$ ). Fluoride concentrations were consistently above the CWQG-PAL of 0.12 mg/L, ranging from 0.148 to 0.156 mg/L. Metal concentrations were generally below detection limits or remained well below CWQG-PAL. In 2022, water quality data collected at R-2 was generally consistent with previous background water chemistry and all selected parameters were within their historical ranges, indicating relatively stable background water quality (**Figure 6-1**). Historically, background results have shown variable cadmium and zinc concentrations, but this has been associated with different lab detection limits between years, as these metals have typically been below detection limits over time at the background stations.

The Tutcho Lake background water quality (R-3) is generally consistent with the Camsell River background water quality, but conductivity values were below 100  $\mu\text{S}/\text{cm}$ . Metal concentrations between these two background stations also exhibited minor differences. For instance, uranium concentrations at R-3 were approximately 3-5 times lower than levels measured in R-2, whereas arsenic and copper concentrations in R-3 were slightly higher than those in R-2. In 2022, water quality data collected in R-3 was generally stable and all selected parameters were within their historical ranges (**Figure 6-1**). Similar to the Camsell River background results, fluoride in Tutcho Lake (R-3) has consistently been above CWQG-PAL.

## 6.2 Contact Lake Background Water Quality Results

Monitoring station CL-8 is considered to represent the background condition for the Contact Lake Mine site. The evaluation of historical water quality results indicated that the Contact Lake background water quality is characterized as circumneutral pH (6.35 – 7.69), low TSS (<3 mg/L), low sulphate (<2 mg/L) and low conductivity (<50 µs/cm).

Comparison between the R-3 (Tutcho Lake) and CL-8 (Contact Lake) indicated that CL-8 has slightly lower major ions (Ca, Mg, Na, SO<sub>4</sub>, Cl etc.) concentrations, as well as hardness and conductivity values. Fluoride concentrations at CL-8 ranged from 0.092 to 0.111 mg/L, which met applicable CWQG-PAL guideline. Metal concentrations at both stations were comparable and remained low. In 2022, water quality data collected in CL-8 was relatively stable and all selected parameters were within their historical ranges (**Figure 6-1** and **Figure 6-2**). It should be noted that R-3 and CL-8 are located in different watersheds, so it is expected that there will be some variation in the water chemistry between these two stations.

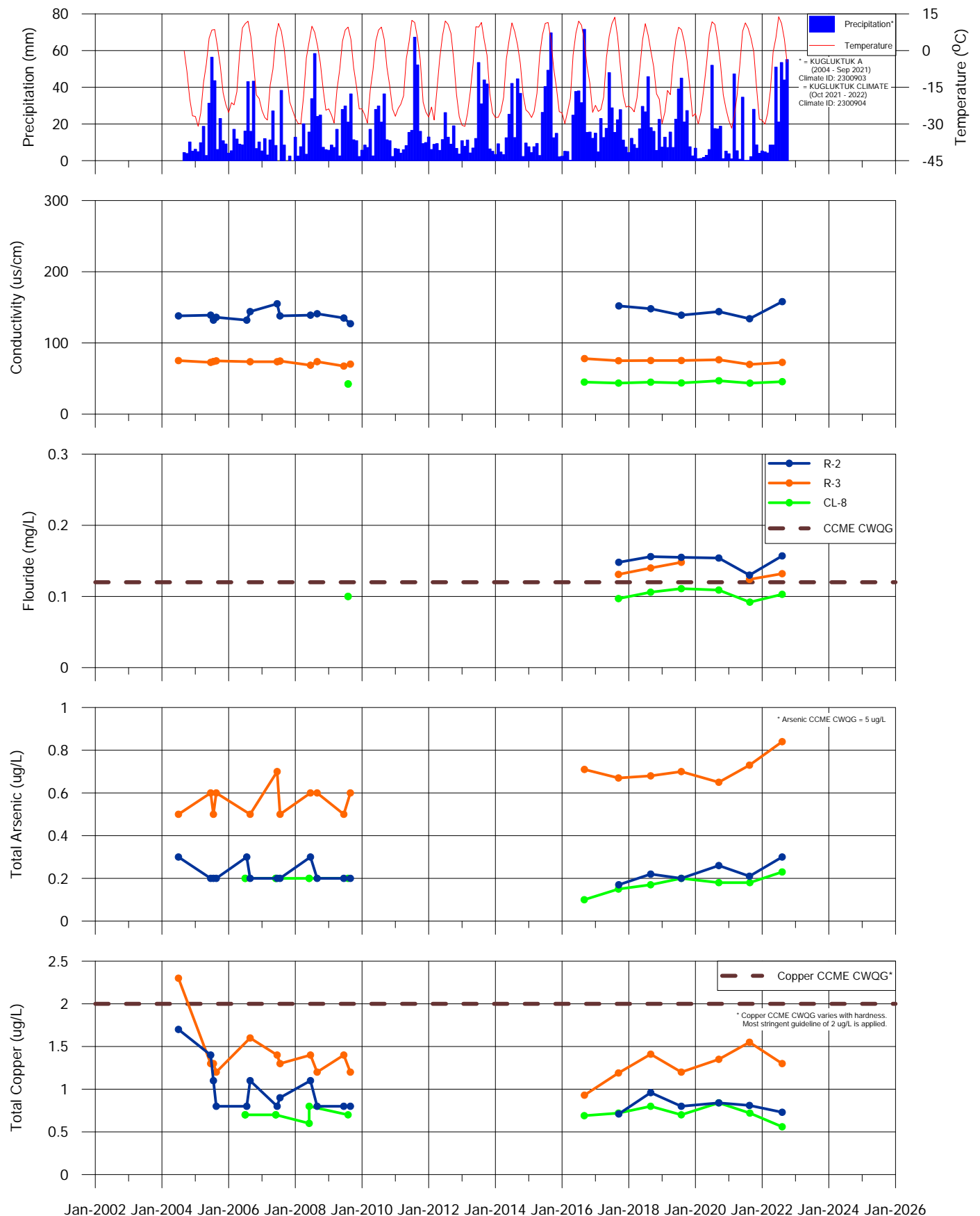


Figure 6-1. Time-series Surface Water Quality - Background Stations



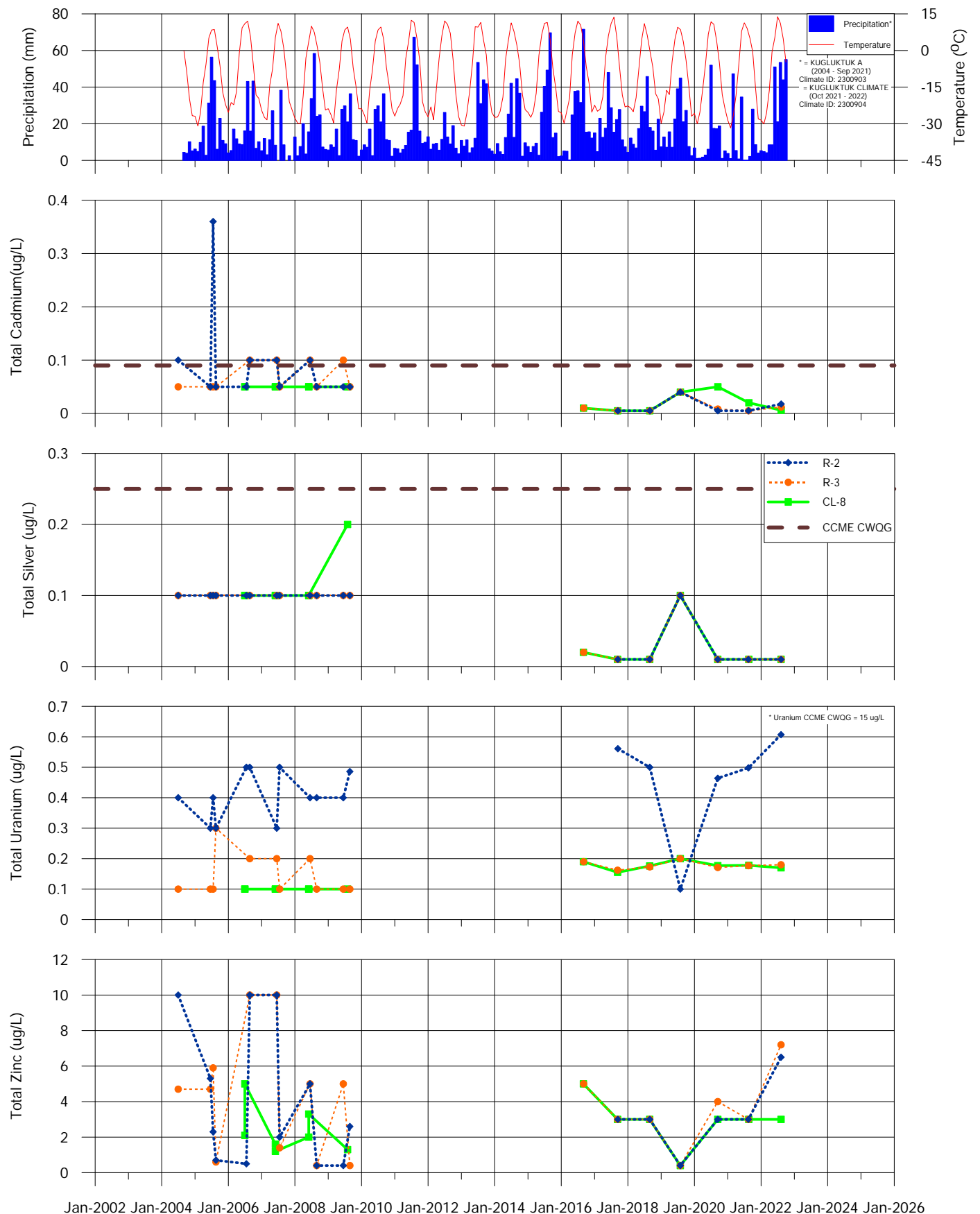


Figure 6-2. Time-series Surface Water Quality - Background Stations

## 7. Terra Mine

### 7.1 Site Summary

Terra Mine is situated approximately 390 km northwest of Yellowknife, on a peninsula between the south shore of the Camsell River and the north shore of Ho-Hum TCA (**Appendix A, Figure 4**). Mining at the Terra site commenced in the late 1960s with the discovery of high-grade silver and rich copper veins and ceased in 1985. (SLR 2017). The Terra Mine is an underground mine extending to 400 m below surface (SRK 2008). It is the largest of the five mine sites that make up the Silver Bear Mines. **Appendix A, Figure 4** shows the Terra Mine water quality monitoring stations sampled in 2022, including surface facilities and contaminated source areas at the site.

Surface facilities include an ore processing plant, assay lab, power, heating and compressor plants, fuel storage tanks, maintenance shops, warehouses, offices, and a camp (**Appendix A, Figure 4**). A dock is located on the Camsell River and a 1,500 m long airstrip sits on the northern shore of Moose Bay (SENES 2008).

There are 13 openings into the underground mine, divided into three categories: vertical or sub-vertical openings, horizontally oriented openings, and stopes that have been mined through to the surface and left open (SRK 2008). Vertical openings include ventilation raises and horizontal openings include adits. Several of the adits and portals produce small flows of water, particularly early in the open water season, but the discharge of mine waters from the mine openings is limited by the terrain (SRK 2008).

Terra Mine milled ore for other mines in the Silver Bear Mine area. In addition to the 460,000 tons (t) of ore produced from the Terra Mine, an additional 63,000 t of ore from Norex Mine and Smallwood Mine were processed in the mill at the Terra Mine site. Approximately 500,000 t of tailings were produced from ore processing at the Terra Mine mill during its operations (DXB 2018). These tailings are located along the shore and submerged in Ho-Hum TCA (SLR 2017). Ho Hum Lake tailings containment area (TCA) has a surface area of 213,000 m<sup>2</sup> and an estimated volume of 1,561,000 cubic metres (m<sup>3</sup>) (SENES 2008). Tailings are exposed in two locations: the triangle shaped West Beach on the edge of Ho Hum Lake TCA just below the mill, and the East Beach tailings. The area of exposed tailings is about 2,200 m<sup>2</sup> (SENES 2008).

The waste rock stored on site came from the underground mine (SRK 2008). Waste rock has been placed on the shore of Ho Hum Lake TCA and levelled to create storage yards for mining equipment and supplies. Tailings from ore processing have been disposed of in and adjacent to Ho Hum Lake TCA (DXB 2018).

The Terra Mine workings sit between two large bodies of water, the Camsell River and Ho Hum Lake TCA (SENES 2008). Several additional surface waterbodies lie within and surrounding the Terra Mine site. Some of these waterbodies have shorelines altered during operational periods (e.g., dykes, weirs, culverts, dock walls), or have been used to contain mine waste (e.g., tailings storage). Many of the waterbodies also lie downstream of previous mining/industrial activities and/or ongoing source terms such as waste rock, tailings or hydrocarbon impacted soils (DXB 2018). The surface waterbodies within and surrounding Terra Mine were generally clear and consistent with earlier classifications of primarily oligotrophic conditions (DXB 2018). The ground between the water bodies has steep rocky slopes that shed runoff rapidly and would not provide a lot of recharge to the groundwater (SRK 2008).

The Ho Hum drainage system includes Little Ho Hum Lake at the headwater flowing to the Ho Hum Lake TCA, through the Upper and Lower Wetland to Moose Bay and to the Camsell River. There are two distinct wetland zones in the Ho Hum Lake TCA outlet area, distinguished by their different water elevations. The Upper Wetland lies at the downstream edge of Ho Hum Lake TCA. The wetland surface area is about 2,300 m<sup>2</sup>. The Lower Wetland lies just below the Lower Dyke, where the water surface is between one and two meters lower than in the Upper Wetland. The surface area is about 2,800 m<sup>2</sup>. There is limited growth of new vegetation in the Upper Wetland, partly due to higher water levels. The Lower Wetland is full of thriving vegetation, and discharges into Moose Bay, which is directly connected to the Camsell River (SENES 2008).

Based on assessments conducted, approximately 9,547 m<sup>3</sup> of PHC contaminated soil requires remedial activity throughout Terra Mine (AECOM 2014 and 2019).

## 7.2 Terra Mine – Waterbodies, Drainage Pathways and Contaminant Concerns

The historical Terra Mine area is situated on a bend of the Camsell River, between Jackfish Bay and Moose Bay. Several aquatic waterbodies lie within and surrounding the Terra Mine site, including the Camsell River, Jackfish Bay, Moose Bay, Ho-Hum TCA as well as numerous smaller surface lakes, ponds, and streams.

Aquatic assessment and water quality sampling at the Terra Mine site have been conducted at Terra Mine site since 2002. This has included water, sediment, benthos, fish, and sediment pore water sampling. Based on the review of contaminated areas and surface flow patterns at the Terra Mine site, a summary of the historical water quality findings, contaminant concerns and their drainage pathways identified at Terra Mine was provided as follows (SLR 2017; CIRNAC 2019, 2020; AECOM 2021b):

- There are two drainage pathways identified at Terra Mine site. The primary one originates with Little Ho-Hum TCA, and drains into Ho-Hum TCA, and then discharge to the Moose Bay through the Ho-Hum wetland area. The second originates with Mill Complex/Fuel tank farm and discharges to the Camsell River near the dock.
- Fluoride, total aluminum, arsenic, iron, copper, lead, silver, and zinc are identified COCs in surface water at the Terra Mine site due to exceedances of CWQG-PAL at multiple stations. Of these COCs, arsenic and copper are most elevated, and considered as the primary concerns.
- Long-term water quality data (2002-2022) indicated that arsenic concentrations in Ho-Hum TCA continue to decrease over time. However, total copper concentrations in Ho-Hum TCA were slightly increasing over time, from ~6 to ~11 µg/L.
- The elevated metal concentrations in Ho-Hum TCA were attributed primarily to tailings, and to a lesser extent to waste rock (Hemmera 2015). Given the low waste rock oxidation rates and decreased arsenic concentrations over time, acid drainage conditions are unlikely to occur in the future. This is consistent with the ABA tests (Lorax 2006), which found that Terra Mine site waste rock had neutral paste and rinse pH results, and oxidation of sulphide bearing minerals was very low.
- Although PHC contaminated soils were previously identified in drum storage areas, PHCs F1-F4, BTEX and VOCs concentrations at selected stations remained below detection limits during all water quality sampling events. Therefore, surface water was not impacted by petroleum hydrocarbons.

## 7.3 2022 Monitoring Program

The 2022 sampling stations at Terra Mine were sampled in accordance with the GBL Sites PRMP and are shown on **Appendix A, Figure 4**. Reference stations R-2 and R-3 serve as applicable background stations for all Silver Bear Sites (per previous monitoring events). **Table 7-1** summarizes the sampling stations, locations, parameters evaluated at the Terra Mine site in 2022.

**Table 7-1. Terra Mine 2022 Sampling Stations**

Waterbody	Station ID	Water Type	Laboratory Analysis					Radio-Nuclides	SNP Station (Y/N)	Rationale
			General Chemistry	Total Metals	Dissolved Metals	PHC and BETX	Oil and Grease			
Ho Hum Tailings Containment Area (TCA)	T-8A	Aquatic, depth=1m	x	x	x	x	x		Y	Characterization of Ho-Hum TCA water; SNP requirement
	T-8B	Aquatic, depth =5m	x	x	x	x	x		Y	
	T-8C	Aquatic, depth=11m	x	x	x	x	x		Y	
Moose Bay	T-10	Aquatic, surface grab	x	x	x				Y	Moose Bay downstream of Ho-Hum discharge; SNP requirement
Belachey Lake	R-2	Aquatic, surface grab	x	x	x				N	Background of Camsell River system
Tutcho Lake	R-3	Aquatic, surface grab	x	x	x				N	Background of Tutcho Lake

## 7.4 Water Quality Results

The 2022 water quality analytical results for the Terra Mine site are presented in **Appendix B, Tables B-1 to B-3**. Historical and 2022 concentrations for selected parameters were plotted over time to illustrate results related to long-term water quality (**Figure 7-3**). These selected parameters were either identified as contaminants of concern (COCs) or used to provide general characterization for overall water quality. Field data and observations are presented in **Appendix C** and site photographs in **Appendix D**.

### 7.4.1 Aquatic Observations

During the 2022 field campaign, the Camsell River water level was found to be similar to 2020 and 2021 and slightly lower than documented during previous sampling campaigns (including 2017, 2018, and 2019 during which only minor water elevation was reported).

The aquatic waterbodies within and surrounding Terra Mine were generally clear and consistent with earlier classifications of primarily oligotrophic conditions. Ambient conditions were overcast with light rain periods, with light winds, causing small waves, during the late morning and early afternoon of August 10, 2022, which is when water quality samples for background stations, R-2 and R-3 were collected. Ambient conditions were overcast with sunny periods, with light winds, resulting in small waves, during the late morning and early afternoon of August 10, 2022, when water quality samples for stations T-8 and T-10 were collected.

In keeping with previous monitoring programs, in situ measurements of temperature were collected to identify temperature stratifications in the water column. A YSI Instruments multimeter probe was used at stations R-2, R-3, T-8, and T-10 to gauge temperatures.

Based on reviewer feedback, a standardized depth measurement to track the water level in Ho Hum Lake TCA was completed. As 2022 was the first year, no conclusions can be inferred, however the intent is to continue to measure the same location as reference in future monitoring programs. For the Ho Hum Lake TCA, the measurement was collected at the Ho Hum weir. The measurement from the top of the weir to Ho Hum Lake TCA was 0.57 m and from the top of the weir to culvert to Moose Bay was 1.04 m. **Figure 7-1** outlines the field conditions in 2022 and **Figure 7-2** depicts the locations of the measurements for Ho Hum Weir.





Figure 7-1. Ho Hum Weir 2022 Field Conditions

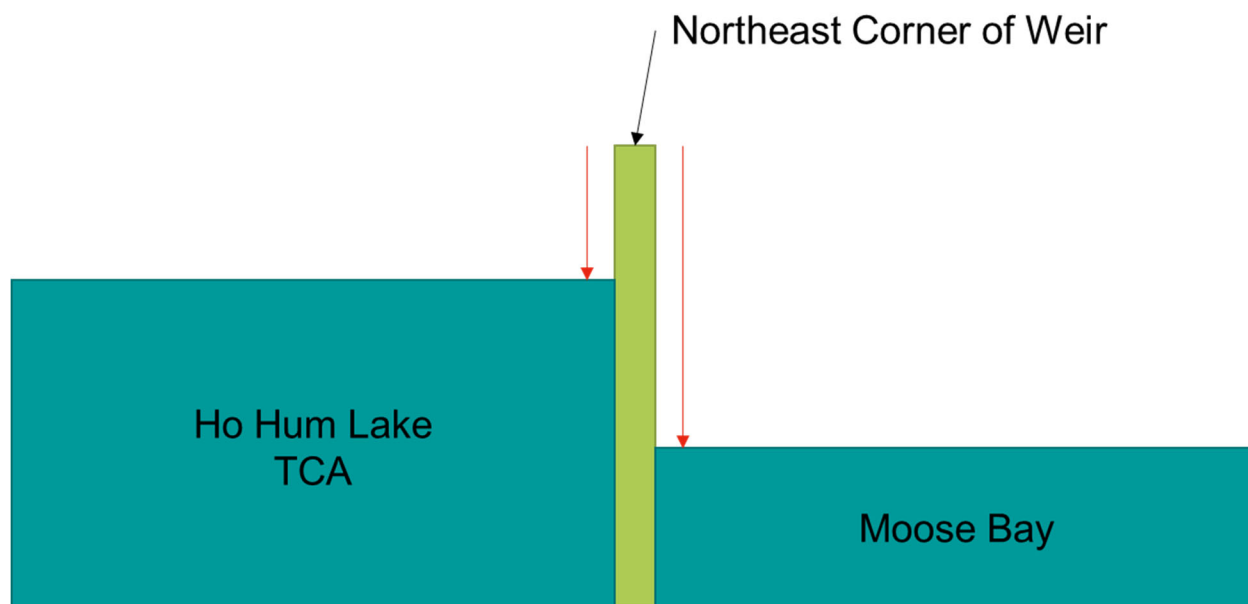


Figure 7-2. Ho Hum Weir Measurements Diagram

## 7.4.2 General Chemistry

During the 2022 sampling event, both field and analytical results indicated circumneutral (7.7-7.9) conditions at T-8 (Ho-Hum TCA). Conductivity (162 to 184  $\mu\text{S}/\text{cm}$ ), hardness (76.4 to 89.2 mg/L) and TDS (110 to 128 mg/L) were elevated and above Camsell River background ranges. Although water quality was generally consistent along the depth profile, concentrations of conductivity, hardness, and TDS were slightly higher in T-8C, at the bottom of the lake. At T-10 (Moose Bay), conductivity, hardness and TDS concentrations were lower than those in T-8, and generally consistent with Camsell River background water quality. As shown on **Figure 7-3**, conductivity values at T-8 and T-10 exhibited decreasing trend between 2002 and 2022, indicating the overall improved water quality over time.

Similar to previous years, sulphide concentrations were below detection limit for all samples. Sulphate concentrations in all samples remained low (<20 mg/L), which were consistent with background values. The low sulphide and sulphate concentrations, together with the circumneutral and slightly alkaline pH indicate that the site is not impacted by ARD.

Ammonia, chloride, nitrate, and nitrite were below the associated CWQG-PAL guidelines or below detection limits. Fluoride concentrations exceeded the CWQG-PAL guideline of 0.12 mg/L in all samples at T-8, T-10, and reference stations (R-2 and R-3). In 2022, fluoride concentrations at T-8 ranged from 0.61 to 0.69 mg/L, approximately 5 times higher than background levels, but within the range of historical water quality conditions for this station located within the Ho-Hum TCA. Similar to conductivity results, fluoride concentrations were generally higher at depth sampling location T-8C (**Figure 7-3**).

Fluoride concentration at station T-10 was 0.146 mg/L, which was marginally above the CWQG-PAL of 0.12 mg/L and consistent with background conditions. The slightly elevated fluoride concentrations in water samples may be derived from the weathering of fluoride-bearing minerals (i.e., fluor spar, fluor apatite, topaz and cryolite etc.). Mine excavations that intersect deeper aquifers during mining operations may have resulted in higher levels of fluoride (Arcadis 2016), though the presence of tailings with high surface area may also provide opportunity for enhanced fluoride leaching. Based on elevated fluoride concentrations in reference station samples, local mineralogy is likely the source of elevated fluoride concentrations within the Ho-Hum drainage pathway. However, mining activities and tailings deposition have concentrated the local mineralogical effects.

Dissolved organic carbon (DOC) concentrations at T-8 ranged from 12.2 to 13.8 mg/L, which are slightly higher than those in T-10 and approximately two times higher than background station R-2. The comparison between total and dissolved organic carbon concentrations indicates that organic matter is primarily present in dissolved phase.

In summary, all general parameters at Terra Mine site met applicable CWQG-PAL guidelines, except for fluoride. Results were also below the applicable SNP EQC (as provided in the updated water licence for stations T-8 and T-10).

## 7.4.3 Total and Dissolved Metals

Total arsenic and copper are identified as primary contaminant concerns, due to their elevated concentrations in Ho-Hum TCA and associated drainage system. In 2022, total aluminium and iron in T-10, decreased in comparison to 2021 and were below the CWQG-PAL. Water Licence S17L8-002 provides discrete EQC for stations T-8 (Ho-Hum TCA) and stations T-10 (at mouth of Moose Bay). During the 2022 sampling event, all metal concentrations, including arsenic and copper, were below the EQC provided for these stations.

In progress evaluation of historical water quality data has indicated decreasing trends in total arsenic concentrations in Ho-hum TCA at T-8A, T-8B, T-8C. Total copper concentrations at T-8A, T-8B, T-8C generally remained relatively stable between 2002/2003 and 2016, ranging from 6  $\mu\text{g}$  to 8  $\mu\text{g}/\text{L}$ . Since 2017/2018, total copper concentrations marginally increased, from ~8  $\mu\text{g}$  to 10  $\mu\text{g}/\text{L}$ . In 2021, the total copper levels at T-8B and T-8C reached the highest concentrations recorded since 2022. However, the elevated copper concentration at T-8C was partially due to sediment from the sampler hitting the bottom and is not representative of normal conditions. between 2002 and 2022. While concentrations slightly

decreased in 2022, they are still higher than the historical values (**Figure 7-3**). Similar to previous years, total arsenic and copper concentrations exceeded the CWQG-PAL but were well below the Water Licence EQC. The comparison between 2021 and 2022 water quality data indicated consistent or slightly increased arsenic and copper concentrations at T-8. In 2022, total aluminium concentrations at T-8C decreased to approximately eighteen times lower than 2021 concentrations and below the CWQG-PAL and the Water Licence EQC for aluminium. A ten-times increase in total concentrations of aluminium and iron was observed in 2021 which was likely due to the Van Dorn hitting the bottom and stirring up the sediments. Lack of total suspended solids testing data in 2021, prevented confirmations of sediment interferences. In 2022, total suspended solids were reported as below the detection limit ( $<3$  mg/L) which indicated that there was no sediment interference. The concentrations of aluminium and iron should be continued to be monitored to verify concentrations remain within background water quality conditions. The Water Licence EQC for iron has not been established. Part of the elevated aluminium and iron concentrations in water samples may be derived from the weathering of iron-sulphide and aluminosilicate-bearing minerals (i.e., pyrite, plagioclase, etc.).

As shown on **Figure 7-3**, total arsenic concentrations at lake bottom (i.e., T-8C) were slightly higher than those in surface (T-8A) and middle (T-8B) of the lake, while total copper concentrations were generally consistent along the depth. The minor changes in concentrations along depth indicated that the Ho-Hum TCA is well mixed. It is suspected that Ho Hum Lake TCA overturns and mixes almost completely at the end of each open water season (i.e., September or October).

T-10 is an SNP station and is located at the mouth of Moose Bay where it connects to the Camsell River. In 2022, total arsenic and copper concentrations at T-10 were  $0.48 \mu\text{g/L}$  and  $0.93 \mu\text{g/L}$ , approximately four times and 1.5 times lower than concentrations in 2021, respectively (**Appendix B Table B-2**), and met the CWQG-PAL guidelines. These concentrations were still within historical ranges at T-10 location. As shown on **Figure 7-4**, both arsenic and copper concentrations at T-10 exhibited temporal variations over time. The elevated arsenic and copper concentrations observed between 2003 and 2005 may be derived from the Ho-Hum TCA and waste rock used in construction of the airstrip. Since 2006, arsenic and copper concentrations at T-10 generally remained below  $2 \mu\text{g/L}$ , indicating the diminishing impact from the waste rock airstrip. The slightly elevated arsenic ( $8.98 \mu\text{g/L}$ ) was only observed during the September 2016 sampling event, which may be related to the dry weather. Similar to previous years, all metal concentrations at T-10, including arsenic and copper, were well below the EQCs in 2022.

All other metal concentrations at T-8 and T-10 were generally consistent with previous sampling events in 2018, 2019, 2020 and 2021, indicating the relatively stable water quality over time. The comparison between total and dissolved metal concentrations indicated that most of metals are primarily present in dissolved phase.

#### 7.4.4 Hydrocarbons

Based on known PHC contamination of soils (e.g., from drum storage areas and fuel handling activities), reports of hydrocarbon sheens from earlier sampling campaigns, and analytical requirements of the Water Licence SNP, station T-8 (at 3 depths) was sampled for PHCs F1-F4, BTEX and Oil and Grease. Results at stations T-8 and T-10 were below detection limits (and EQC) for all parameters.



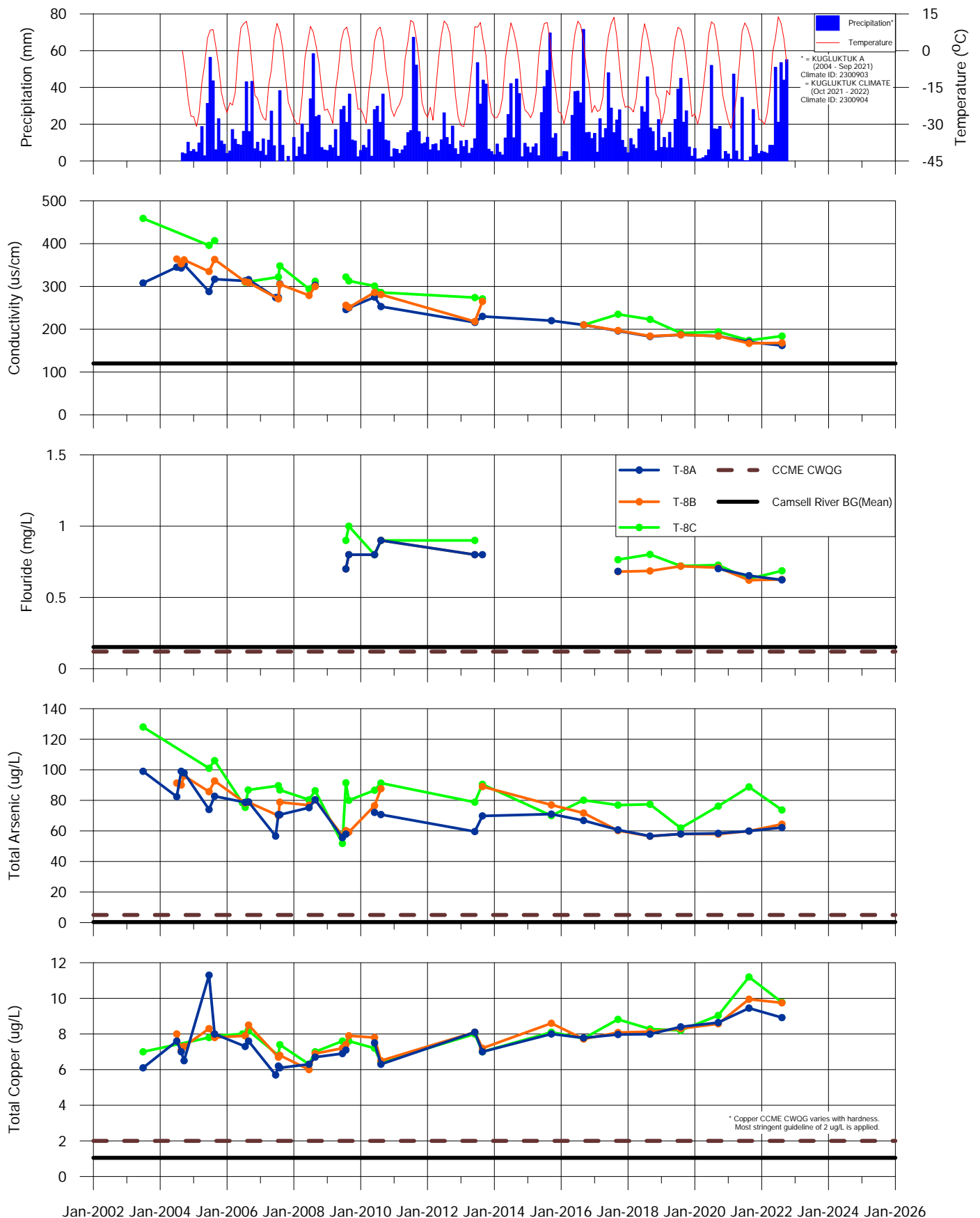


Figure 7-3. Time-series Surface Water Quality - Terra Mine Site (T-8A, T-8B and T-8C)

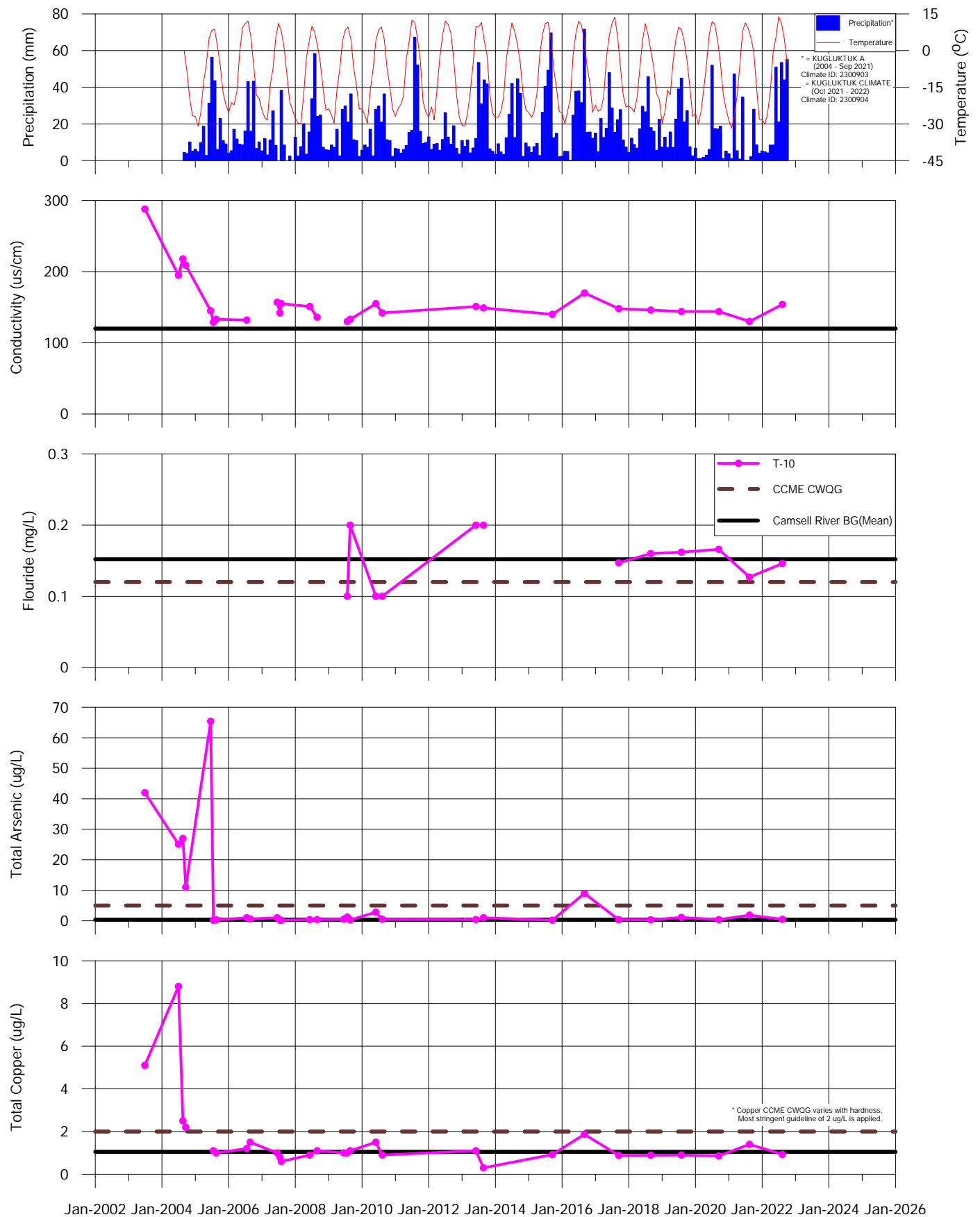


Figure 7-4. Time-series Surface Water Quality - Terra Mine Site (T-10)

## 8. Northrim Mine

### 8.1 Site Summary

The Northrim Mine is located on the north shore of the Camsell River and operated as an underground mill in the production of silver and bismuth (SRK 2008). The initial underground exploration was completed from 1933 to 1935, and intermittent work continued until 1978 with underground workings reaching a depth of approximately 100 metres (m) below surface (SRK 2008).

An estimated 10,800 t of ore was milled on-site and produced approximately 10,000 t of tailings during the operational period (SRK 2008). Most of these tailings were deposited in north shore of Hermandy Lake TCA, but a small quantity was also deposited around the Leachate Pond and the Camsell River near the dock (i.e., the mill entrance). The waste rock was placed along the edge of the Camsell River and in a small pile immediately above the river. In addition, there is approximately 5,638 cubic metres (m<sup>3</sup>) of Petroleum Hydrocarbon (PHC) contaminated soil requiring further remedial activity at the site (AECOM 2014 and 2019).

### 8.2 Northrim Mine - Water Bodies, Drainage Pathways and Contaminant Concerns

Hermandy Lake TCA and Camsell River are the main water bodies at Northrim Site. Hermandy Lake TCA currently discharges to the south-east, through the Leachate Pond and towards the Camsell River (**Appendix A, Figure 5**). Previous assessment work had suggested the original drainage of Hermandy Lake was to the west as an alteration was made during the operational period (DXB 2018). However, the results of a historic aerial photo review along with 2020 ground-truthing via topographic survey along the west side indicate that the original drainage of Hermandy Lake was south, in its present-day position. The historic creek alignment to the south was locally disturbed along its route by a berm construction at the south edge of Hermandy Lake to form the leachate pond, and potentially further downgradient due to tank farm construction (AECOM 2020). Downstream of the Site, there are waste rock piles placed along the edge of the Camsell River and in a small pile immediately above the river. Waste rock was also used to build the access road to Hermandy Lake TCA and the Camsell River.

Based on the review of contaminated areas and surface flow patterns at the Northrim Mine site, a summary of the historical water quality findings, contaminant concerns and their drainage pathways identified at Northrim Mine was provided as follows (SLR 2017; CIRNAC-CARD 2019, 2020; AECOM 2021b):

- There are two drainage pathways identified at Northrim Mine site. The primary one originates with Hermandy Lake, and discharges to Camsell River through the Leachate Pond. The second one originates with waste rock piles and discharging to Camsell River.
- The submerged tailings in Hermandy Lake TCA and the waste rock piles along the embankment of the Camsell River are two primary sources of metal loadings. Water originating from these two contaminant source pathways discharge to the Camsell River.
- Fluoride, total aluminum, iron, arsenic, copper, and lead are identified COCs in surface water at the Northrim Mine site due to exceedances of CWQG-PAL at multiple stations (AECOM 2021b). The slightly elevated fluoride concentrations are derived from the natural conditions.
- Although PHC contaminated soils were previously identified at the former main site tank farm and fuel storage areas, PHCs F1-F4, BTEX and VOCs concentrations at selected stations remained below detection limits or low during all water quality sampling events since 2016. Therefore, surface water was not impacted by petroleum hydrocarbons.
- Long-term water quality data review (2002-2019) revealed that arsenic, lead, and zinc concentrations in Hermandy Lake TCA (NO-7) continue to decrease over time. Decreasing trends in conductivity, TSS, total copper and total zinc concentrations were also observed in Camsell River (NO-6) (AECOM 2021b).

- Water quality at Camsell River is consistent with background conditions, indicating that potential discharges from the Hermandy Lake TCA have not resulted in detectable increases in metal concentrations in the Camsell River.

### 8.3 2022 Monitoring Program

The 2022 sampling stations at Northrim Mine were sampled accordance with the GBL Sites PRMP and are shown on **Appendix A, Figure 5**. Reference stations R-2 and R-3 serve as applicable background stations for all Silver Bear Sites (per previous monitoring events). **Table 8-1** below summarizes the sampling stations, locations, parameters at the Northrim Mine site in 2022.

**Table 8-1. Northrim Mine 2022 Sampling Stations**

Waterbody	Station ID	Water Type	Laboratory Analysis					SNP Station (Y/N)	Rationale
			General Chemistry	Total Metals	Dissolved Metals	PHC and BETX	Oil and Grease		
Hermandy Lake	NO-7	Aquatic, surface grab	x	x	x	x		Y	Hermandy Lake drainage pathway, SNP requirement
Camsell River	NO-6	Aquatic, surface grab	x	x	x	x		Y	Downstream of Hermandy Lake drainage pathway, SNP requirement
Belachey Lake	R-2	Aquatic, surface grab	x	x	x			N	Background of Camsell River system
Tutcho Lake	R-3	Aquatic, surface grab	x	x	x			N	Background of Tutcho Lake

### 8.4 Water Quality Results

The 2022 water quality analytical results for the Northrim Mine site are presented in **Appendix B Tables B-1 to B-3**. Historical and 2022 concentrations for selected parameters were plotted over time to illustrate long-term water quality (**Figure 8-1**). These selected parameters were either identified as COCs or used to provide general characterization for overall water quality. Field data and observations are presented in **Appendix C** and site photographs in **Appendix D**.

#### 8.4.1 Aquatic Observations

During the 2022 field campaign, the Camsell River water levels did not top the dock wall at the Northrim Mine. These water levels were consistent with observations in both 2020 and 2021 (AECOM 2021b, 2022).

During the 2022 field campaign, Hermandy Lake and the Camsell River were generally clear. Ambient conditions were sunny, with high of 17°C temperature and light wind, during the early afternoon of August 8, 2022, which is when water quality samples for station NO-6 and NO-7 were collected.

Based on reviewer feedback, a standardized depth measurement to track the water level in Camsell River was completed. As 2022 was the first year, no conclusions can be inferred, however the intent is to continue to measure the same location as reference in future monitoring programs. For the Camsell River the measurement was collected at the Northrim dock pier post and flagging tape was added to identify for future programs. The measurement from the top of the pier post Camsell River was 0.73 m.

### 8.4.2 General Chemistry

NO-7 is an SNP station, which is located at southeast end of the Hermandy Lake TCA close to the Hermandy Lake outlet. NO-6 is an SNP station located at the discharge point from Hermandy Lake to the Camsell River. During the 2022 sampling event, both field and analytical results at NO-6 and NO-7 indicated circumneutral to slightly alkaline (7.97 and 7.87) condition. Similar to previous results, conductivity (161 and 119  $\mu\text{S}/\text{cm}$ ), hardness (80.6 and 63.8 mg/L) and TDS (99.8 and 85.4 mg/L) were elevated during the 2022 sampling event and above their background ranges. Similar to previous years, sulphide concentrations were below detection limit for all samples. Sulphate concentrations in all samples remained low (<20 mg/L), which were consistent with background values. The low sulphide and sulphate concentrations, together with the circumneutral to slightly alkaline pH indicate that the site is not likely impacted by ARD/ML.

With respect to ions and nutrients, ammonia, chloride, nitrate, and nitrite were below the associated CWQG-PAL guidelines. Similar to previous years, fluoride concentration at NO-6 location was marginally above CWQG-PAL of 0.12 mg/L but were generally consistent with Silver Bear Mine regional background ranges (i.e., 0.15 mg/L), and is not related to contaminant impact. Fluoride concentration at NO-7 location decreased to marginally below CWQG-PAL in 2022.

Dissolved organic carbon (DOC) concentration in NO-7 was 16.3 mg/L, which was approximately three times higher than in NO-6 and background stations. The comparison between total and dissolved concentrations of organic carbon indicate that organic matter is primarily present in dissolved phase.

### 8.4.3 Total and Dissolved Metals

In 2022, water quality at NO-7 remained consistent with previous results, and all selected COCs were within their historical ranges. Similar to previous years, copper (2.48  $\mu\text{g}/\text{L}$ ) and arsenic (6.2  $\mu\text{g}/\text{L}$ ) concentrations in NO-7 marginally exceeded the CWQG-PAL guidelines. In 2022, lead (0.274  $\mu\text{g}/\text{L}$ ) concentration decreased ten-times and went below the CWQG-PAL guidelines. Historical water quality data (2002-2019) indicated decreasing trends in total arsenic, lead, and zinc concentrations in NO-7 (AECOM 2021b). In general, total arsenic, lead, and zinc concentrations in 2022 were lower than those in 2021 and were still within the historical ranges.

In 2022, water quality in NO-6 was generally consistent with Camsell River background, indicating limited or minor impact from upstream contaminants. Metal concentrations including total arsenic were higher than those in 2021 and met the CWQG-PAL guidelines (**Figure 8-1**). Total copper concentration slightly increased to 0.00201 mg/L in 2022 and only marginally exceeded the CWQG-PAL of 0.002 mg/L. The copper exceedance is primarily due to the low hardness values (i.e., <80 mg/L) at NO-6, and therefore most stringent criteria of 0.002 mg/L is applied.

Total copper concentrations in NO-6 only marginally exceeded the CWQG-PAL in 2018 and 2022 and met the guideline in 2019, 2020 and 2021. The comparison between total and dissolved metals concentrations indicates that metals are primarily in dissolved phase.

### 8.4.4 Hydrocarbons

Based on findings of terrestrial PHC contamination, reports of detectable PHC concentrations during earlier water sampling campaigns, and analytical requirements of the Water Licence SNP, Hermandy Lake (station NO-7) and the Camsell River (station NO-6) were sampled for PHCs F1-F4 and BTEX. Similar to 2018, 2019, 2020 and 2021 results, all 2022 water sample results were below detection limits for these parameters.

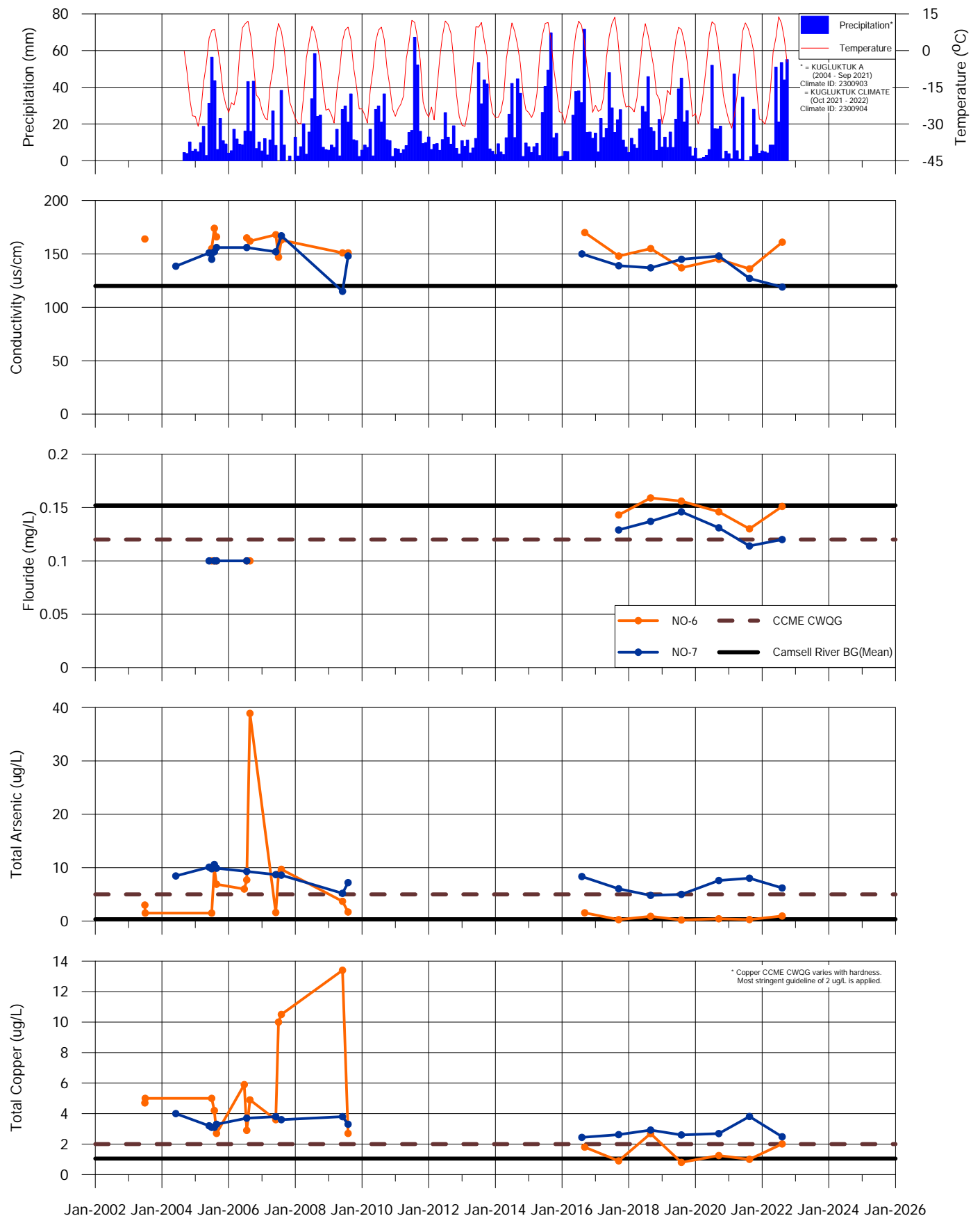


Figure 8-1. Time-series Surface Water Quality - Northrim Mine Site

## 9. Norex Mine

### 9.1 Site Summary

Norex Mine is located approximately 7 km upstream from Terra Mine and 600m south of the Camsell River (INAC 2005). Norex was a silver mine that operated in conjunction with the facilities at Terra Mine and was in development and operation between the 1970s and 1983. Ore was first mined using open pit methodology from Graham Vein in 1970-1971 (DXB 2018). During these time periods, approximately 1,000 t of ore was milled on site and an additional 45,000 t of ore was hauled to Terra Mine for processing (DXB 2018). Tailings are not present at the Norex Mine site because the ore was processed at Terra Mine (SLR 2017), except for a small volume of tailings reportedly produced near Graham Vein. Underground workings reached a depth of 180 m. There is a waste rock pile of approximately 40,000 m<sup>3</sup> (approximately 80,000 t) located just below the main adit entrance. Waste oil may have been deposited in the waste rock as non-volatile total extractable hydrocarbons were detected at waste rock seep locations at the Norex Mine (DXB 2018).

Graham Vein is classified as an open trench, measuring approximately 90 m long, widths of 4 to 13 m, and is approximately 25 m deep overall (AECOM 2022). There is a flat, low pile of waste rock (about 3,500 m<sup>3</sup>) located at the entrance to the Graham Vein trench (SENES 2008). Xeron Pond is found down-gradient of the Graham Vein trench and workings. Historical records suggest approximately 1,000 t of tailings were deposited in (or adjacent to) the pond during early milling activities (DXB 2018). Previous monitoring results indicated no significant water quality issues at Graham Vein (NX-5) and Xeron Pond (NX-6) (INAC 2011). Therefore, sampling at these locations was only conducted between 2003 and 2006 and resumed in 2016 and 2017. In 2016, NX-6B, located between Graham Vein waste rock area and Xeron Pond, was added to sampling program, but sampling at this location was discontinued in 2017. It has been determined that no further water quality monitoring is required at Graham Vein location.

The current surface features at Norex include two portals, one of which leads to an underground maintenance shop, and three ventilation raises. Additional features remaining on site include a maintenance garage, a ventilation and compressor plant, and fuel tanks. At Graham Vein, the features include an open mining trench, an old wooden ore bin and the remains of a crushing plant (SENES 2008).

The primary area of hydrocarbon contamination is the fuel tank farm and the main drum storage area. The total quantity of F1/F2 contaminated material targeted for remediation is estimated to be 360 m<sup>3</sup> (AECOM 2014 and 2019).

### 9.2 Norex Mine - Water Bodies, Drainage Pathway and Contaminant Concerns

The Camsell River is the main water body near the Norex Site and located approximately 600 m northwest of the Norex waste rock piles (**Appendix A, Figure 6**). Water quality at R-2 is representative of the background Camsell River. Based on the review of contaminated areas and surface flow patterns at the Norex Mine site, a summary of the historical water quality findings, contaminant concerns and their drainage pathways identified at Norex Mine was provided as follows (Senes 2008; SLR 2017; CIRNAC 2019, 2020):

- A plug of ice is present at the Norex Mine site adit which, at its largest size during spring, almost fills the entire opening. As spring and summer proceed, the ice melts; this is the presumed major source of water volume discharging from the adit, and the volume of adit discharge similarly varies, declining as summer proceeds. There is limited information about adit discharge volume, but it has been measured in the past (2006 summer) to be in the order of 30 to 60 litres per minute. The adit discharge precipitates iron oxides (potentially with co-precipitated inorganic elements like arsenic) on the ground surface as it emerges from the underground and then infiltrates into the waste rock pile. Some of the infiltrated water presents as seepage, ponded along the toe of the waste rock pile. Ultimately, all of the adit discharge water flows to the north-northwest where it connects with a discontinuous creek and wetland and flows further north to connect with the Camsell River.



- Previous geochemical testing of waste rock indicated that some of the waste rock could be a source of zinc loading to the environment (Lorax 2006). Parts of the waste rock pile likely also release cadmium, lead, and zinc, as seepage emerging from the pile contains elevated concentrations of these metals. The mine adit water and Norex waste rock pile have therefore been evaluated as the primary sources of metal loading to the surrounding environment at the mine site.
- Historically, in the mine vicinity, water quality sampling has taken place at the adit discharge (NX-1, NX-1B), and at seepage points at the toe of the waste rock pile: NX-2 at ponded water on the east side and NX-3 at ponded water on the west side. Variable water volume and flow has been a consideration at all sample locations due to seasonal variations in flow from the adit, and both seasonal and annual differences in the volume of ponded seepage along the waste rock pile.
- Total fluoride, total aluminum, arsenic, iron, copper, lead, silver, and zinc have been identified as the main COCs at the Norex Mine site due to exceedance of CWQG-PAL guidelines at multiple locations. Of these COCs, arsenic, copper, lead, and zinc are elevated in water samples collected from mine adit and waste rock area. Concentrations of COCs have generally been much higher in the ponded water sampled along the waste rock seepage points than the adit water discharge, with a few exceptions. The water quality also has varied historically between NX-2 and NX-3; it has been surmised that the relatively higher water volume at NX-2 compared to NX-3 is at least partially a cause of the higher concentrations of some parameters typically observed at NX-3.
- Although PHC contaminated soils were previously identified in waste rock areas, PHCs F1-F4, BTEX and VOCs concentrations at selected stations remained below detection limits during all water quality sampling events, except for NX-3. F2 and/or F3 fractions at NX-3 were detectable during 2008, 2016, 2017 and 2018 sampling events. However, it was suspected that the elevated DOC concentrations at this location may cause the false positive hydrocarbon concentrations. Therefore, surface water is not considered to be impacted by petroleum hydrocarbons.
- Radionuclides testing was only conducted at the mine adit (NX-1) in 2007 and 2008. The results indicated that Pb-210 and Ra-226 were approximately 10 times below the Canadian Drinking Water Quality Guidelines, and therefore were not identified as a potential contaminant of concern at the Norex site. Radionuclides testing was not recommended as part of the sampling program according to the GBL Sites Pre-Remediation Monitoring Plan (PRMP) and or the SNP program (S17L8-002).
- All water quality data to date (2009-2022) collected at the Camsell River discharge point (NX-12) indicate that the Camsell River has not been impacted by the adit discharge water or seepage from the waste rock pile.

### 9.3 2022 Monitoring Program

The 2022 sampling stations at Norex Mine were sampled in accordance with the GBL Sites PRMP and are shown in **Appendix A, Figure 6**. It is noted that reference stations R-2 and R-3 serve as applicable background stations for all Silver Bear Mine sites (per previous monitoring events). **Table 9-1** summarizes the sampling stations, locations, parameters at the Norex Mine site in 2022.

**Table 9-1. Norex Mine 2022 Sampling Stations**

Waterbody	Station ID	Water Type	Laboratory Analysis					SNP Station (Y/N)	Rationale
			General Chemistry	Total Metals	Dissolved Metals	PHC and BETX	Oil and Grease		
Waste Rock Seep	NX-3	Seepage, syringe	x	x	x	x		Y	Waste rock seepage in area with hydrocarbon contamination, SNP requirement
Camsell River	NX-12	Aquatic, surface grab	x	x	x	x		Y	Receiving environment of the Norex and Graham Vein drainage, SNP requirement
Belachey Lake	R-2	Aquatic, surface grab	x	x	x			N	Background of Camsell River system
Tutcho Lake	R-3	Aquatic, surface grab	x	x	x			N	Background of Tutcho Lake

## 9.4 Water Quality Results

The 2022 water quality analytical results for the Norex Mine site are presented in **Appendix B Tables B-1 to B-3**. Historical and 2022 concentrations for selected parameters were plotted over time to illustrate long-term water quality (**Figure 9-2** and **Figure 9-3**). These selected parameters were either identified as COCs or used to provide general characterization for overall water quality. Field data and observations are presented in **Appendix C** and site photographs in **Appendix D**.

### 9.4.1 Aquatic Observations

During the 2022 field campaign, ambient conditions were sunny with cloud cover, with high of 17°C temperature and light winds during the early afternoon of August 8, 2022, which is when water quality samples for stations, NX-3 and NX-12 were collected.

At the mine area proper, flow was observed coming from the adit, as is generally consistent with previous years. At the toe of the waste rock slope, station NX-3 had approximately 8-10 cm of water between grass tussocks, similar to 2021 observations. Based on comments received on the 2021 Water Quality Monitoring Report (AECOM 2022), the sample was collected approximately 3 m southwest of the NX-3 SNP sign within the wetland area; that area was then flagged for clarity and consistency in future sampling. As has been reported previously, there is no flow of water at NX-3; it is stagnant, ponded water of variable volume from year to year. **Figure 9-1** below shows the NX-3 sample location as it has changed over the years. Notably, photo comparisons from historical sampling events have shown a significant decline in the volume of ponded water at NX-3 over time, with some years having little to no standing water from which to collect a sample.



**Figure 9-1. NX-3 sample location variability: 2005 in the top left, 2007 top right, 2017 middle left, 2018 middle right, 2019 bottom left (note microbial biofilm over water indicating high levels of bacterial activity) and 2022 bottom right.**



Reviewer feedback from a previous report had requested measurement of the adit discharge water at the time of sampling. As 2022 was the first year, no conclusions can be inferred, however the intent is to continue to measure the same location as reference in future monitoring programs. For the Norex adit, the flow estimate was completed by flagging a 1 m distance in the discharge channel, with a foam ear plug used to assess the velocity of flow between the two pin flags. The flow measurement from the adit was approximately 0.4 m/s. However, because the flow is spread across an irregular surface area with no contained channel, it is not possible to measure a discharge volume, nor is possible to accurately estimate velocity which is affected by the relative smoothness of the flow paths; there is a need for a more accurate method to assess adit discharge volume.

### 9.4.2 General Chemistry

NX-3 is an SNP station intended to be a measure of waste rock seepage at the base of the waste rock pile on the west side. In 2022, water quality at this location exhibited lower conductivity (488  $\mu\text{S}/\text{cm}$ ), hardness (275 mg/L), TDS (380 mg/L), compared to previous years. However, TSS and turbidity at NX-3 were highly elevated, reached 599 mg/L and 195 NTU, respectively. This indicated a high fraction of suspended sediment particles in water, that can have significant impacts on water quality. TSS at NX-3 was not analyzed in 2021, but generally remained below 100 mg/L in previous years. The significant increase in TSS at NX-3 in 2022 is likely related to entrainment of sediment during the sampling event because of the very low volume of water present.

At Norex Camsell River station (NX-12), water quality was generally consistent with the Camsell background condition, with slightly alkaline pH (8.04), lower conductivity (157  $\mu\text{S}/\text{cm}$ ), hardness (77.4 mg/L) and TDS (97.9 mg/L) values. Similar to previous years, TSS at NX-12 remained low (4 mg/L).

Similar to previous years, sulphide concentration was below detection limit for NX-12 sample. Sulphide concentration at NX-3 was 0.634 mg/L and was above the detection limit of 0.3 mg/L. Sulphate concentrations in NX-12 remained low (<20 mg/L), which were consistent with background values. The elevated sulphate concentration (i.e., 155 mg/L) at NX-3 suggests that there is some impact from sulphide mineral weathering, which would simultaneously contribute metals. However, the sulphate concentration continued to decrease from 240 mg/L to 38.3 mg/L between 2016 and 2020, increased to 414 mg/L in 2021 and decreased to 155 mg/L in 2022. The decreasing trend results over the years, together with the circumneutral pH at NX-3 indicated that the ARD/ML is limited and diminishing. The slightly elevated concentrations in 2021 might have been a result of relatively drier conditions present in July and August. Typically, maximum concentrations are usually observed during the dry season (i.e., September-October) than wet season (i.e., June to August) (climateatlas.ca, Leith Peninsula grid location). This is particularly prevalent in small areas of ponded water or seepage with little to no flow, such as at NX-3.

With respect to ions and nutrients, ammonia, chloride, nitrate, and nitrite were below the associated CWQG-PAL guidelines. Ammonia concentrations were historically elevated in waste rock seeps, with a peak value of 0.29 mg/L in NX-3 in 2017. Since 2018, ammonia concentrations at NX-3 have remained below 0.02 mg/L. In 2022, the ammonia concentration at NX-3 increased to 0.211 mg/L. The occasionally elevated ammonia concentrations may be related to the wetland/vegetation located in the seep areas at the toe of the Norex waste rock pile and increased biological reduction-oxidation reactions (which would be affected by changes in flow rates and the volume of water) or associated with high TSS in 2022.

Similar to previous years, fluoride concentrations in NX-12 were above CWQG-PAL of 0.12 mg/L but were within the Camsell River background ranges (i.e., 0.15 mg/L), and not related to contaminant impact. In 2022, fluoride concentration reported at NX-3 was 0.413 mg/L, approximately 1.3 times higher than that reported in 2021 and in range with reported in 2017, 2018, 2019 and 2020.

Dissolved organic carbon (DOC) concentrations in NX-3 and NX-12 ranged from 36.8 to 4.63 mg/L, and consistent with background stations. Total organic carbon (TOC) at NX-3 was approximately 5 times higher than DOC, indicating the high fraction of solid particles in water sample. At NX-12, total and dissolved organic carbon concentrations are almost the same indicating that organic matter is primarily present in dissolved phase.



### 9.4.3 Total and Dissolved Metals

Similar to general parameters, most of metal concentrations at NX-3 in 2022 were noticeably higher compared to previous years, including for total arsenic, aluminium, cadmium, selenium and zinc. However, the increased total metal concentrations are likely attributed to high TSS, as suspended sediments can also carry contaminants. Note that shallow pooled water (~8 cm deep) is not aquatic habitat and CWQG-PAL guidelines are therefore not applicable but are referenced to identify the elevated metal concentrations at this location.

In 2022, total arsenic concentration at NX-3 reached 531 µg/L, which exceeded the CWQG-PAL, and was approximately 10 to 20 times higher than those reported between 2016 and 2019 and 1.2 times higher than reported in 2021. Total aluminium concentrations at NX-3 increased to 731 µg/L, which exceeded the CWQG-PAL, and was approximately seven times the reported values in 2021. Total cadmium reached 1.43 µg/L but met the CWQG-PAL. Total selenium concentrations decreased to 0.64 µg/L went below the CWQG-PAL, and approximately half of those reported in 2021. Other COCs including total iron, and lead had higher concentrations in 2022, and increased approximately 70 and 26 times compared to reported values in 2021 and exceeded the CWQG-PAL. Total copper concentration (39.1 µg/L) was higher than those reported historically, and total silver was approximately 29 times higher than the 2021 reported value in 2021.

However, dissolved metal concentrations at NX-3 were generally one to three orders of magnitude lower than total metals, indicating that metals are primarily present in total phase, and are likely due to suspended sediment. The comparison of dissolved metal concentrations between 2021 and 2022 indicated that dissolved metal concentrations at NX-3 were generally comparable or lower in 2022. For instance, dissolved zinc concentrations decreased to 14.7 µg/L and met the CWQG-PAL, and were approximately 77 times lower than those reported in 2021. In 2022, all metal concentrations at station NX-12 (offshore of the discharge point of Norex Mine waters) were generally consistent with Camsell River background conditions, represented by R-2. All metal concentrations remained low and met CWQG-PAL guidelines. Total copper concentrations decreased in 2022 and were below CWQG-PAL guidelines. As shown on **Figure 9-3**, total copper concentration increased from ~0.8 µg/L to a peak of 6.24 µg/L from 2017 to 2020 and decreased back to 0.95 µg/L in 2021 and then to 0.71 µg/L in 2022. Unlike NX-3, dissolved metals concentrations at NX-12 were very similar to their total phases, indicating metals are primarily present as dissolved phase. This is also consistent with low TSS at NX-12.

Overall, elevated total metal concentrations were observed at NX-3, which can be primarily attributed to the high TSS levels present during sampling, and also attributed to the very low volume of water, concentrating contaminant concentrations, and also making the sample location prone to sediment disturbance and entrainment during sampling. However, dissolved metal concentrations at NX-3 showed a modest improvement or remained relatively consistent compared to the values observed in 2021. Water quality at NX-12 was consistent with previous years, with the majority of the metals being present in the dissolved phase.

### 9.4.4 Hydrocarbons

Based on findings of terrestrial PHC contamination reported on the waste rock pile and analytical requirements of the Water Licence SNP, both the Camsell River station (NX-12) and the waste rock drainage station (NX-3) were sampled for PHC F1-F4 and BTEX.

Prior to 2019, low but detectable concentrations of F2 fraction hydrocarbons were reported at station NX-3. In 2022, all hydrocarbon results, including F2, were below detection, which were consistent with 2021 results.

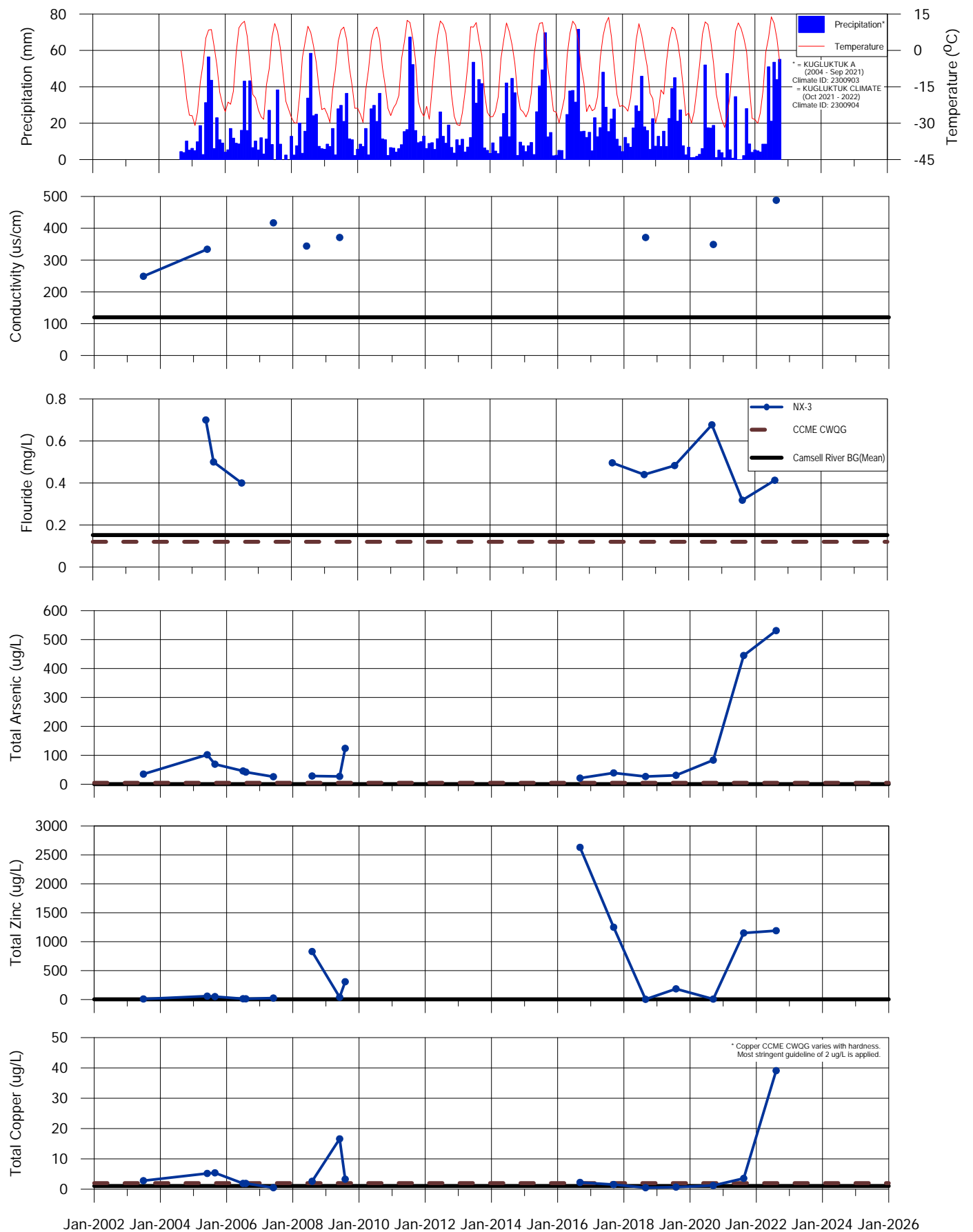


Figure 9-2. Time-series Surface Water Quality - Norex Mine Site (NX-3)

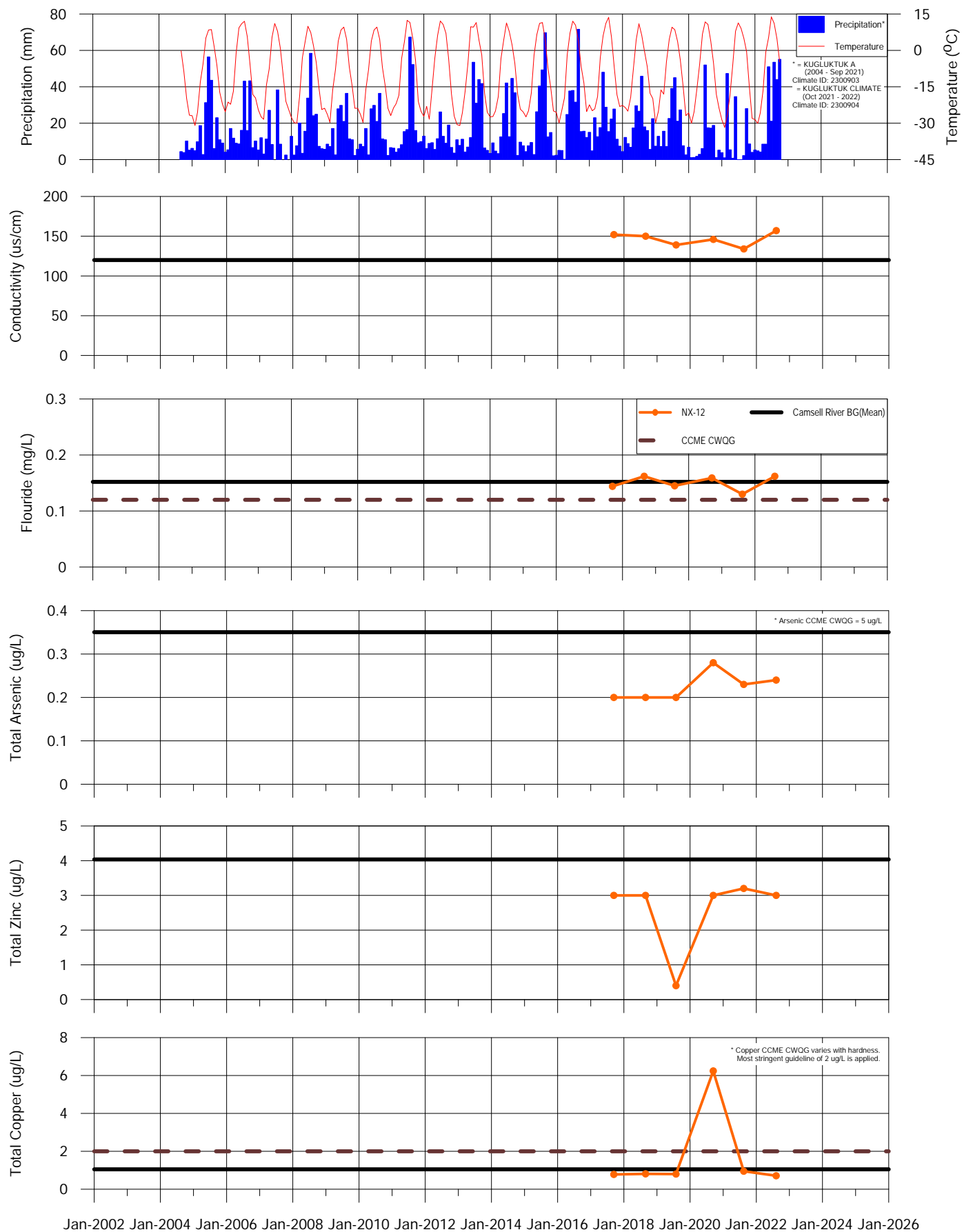


Figure 9-3. Time-series Surface Water Quality - Norex Mine Site (NX-12)



## 10. Contact Lake Mine

### 10.1 Site Summary

Contact Lake Mine is located on the north shore of Contact Lake (**Appendix A, Figure 7**). The site operated intermittently from 1930 to 1980. Milling activities began in 1935 and in 1938 the recovery of pitchblende, a uranium-rich mineral, became another focus of the operation. Milling of the silver and uranium ore was initially conducted on site. In later years, ore was transported by barge and all-weather haul road to the Echo Bay Mines milling plant at Port Radium (DXB 2018).

During on-site milling activities, the tailings were contained within a pond immediately downgradient of the mine openings (i.e., the Tailings Pond), though in some areas, tailings were also left on the ground surface. Waste rock was used to construct pads, roads and working areas throughout the site (DXB 2018). The total estimated volume of waste rock at the site is 29,000 m<sup>3</sup> and approximately 1,000 m<sup>3</sup> of gravity mill tailings are found as a thin layer (up to 20 cm) on the ground surface between the mill and tailings pond, with additional tailings in the pond itself (DXB 2018). Based on completed assessments, the approximate volume of contaminated soil requiring remedial activity at the Contact Lake Mine site is 127 cubic metres of PHC contaminated soil (AECOM 2014 and 2019).

### 10.2 Contact Lake Mine - Water Bodies, Drainage Pathways and Contaminant Concerns

Contact Lake has experienced and continues to have the potential to be impacted by mine surface run-off. The Mine Area lies on a tiered plateau, with water draining from the waste rock pile below the adit, through the tailings into the marsh area and Tailings Pond for approximately 225 m. The Tailings Pond discharges to Contact Lake via a small cascading stream (DXB 2018) for approximately 115 m.

Based on the review of contaminated areas and surface flow patterns at the Contact Lake Mine site, a summary of the historical water quality findings, contaminant concerns and their drainage pathways identified at the Site was provided as follows (SLR 2017; CIRNAC 2019, 2020):

- Waste rock and the tailings pond at the main Mine Area are primary sources of metal loadings. Mine impacted water originating from the waste rock pile and tailings pond flows directly to Contact Lake.
- Contact Lake is considered as the receiving environment and continues to have the potential to be affected by surface water runoff from the main mine site. Water quality at CL-8, located at west end of the Contact Lake, represents local background conditions.
- Fluoride, total aluminum, arsenic, iron, copper, silver, mercury, and uranium are identified COCs at the Contact Lake Mine site, due to exceedances of CWQG-PAL at multiple locations. Of the COCs, arsenic, copper and uranium concentrations were elevated in water samples collected from the tailings pond and waste rock area (AECOM 2021b).
- Although there are potential hydrocarbon concerns identified at the East Arm Echo Bay Fuel Storage Area that relate to fuel management and both terrestrial and aquatic releases of PHCs, PHCs F1-F4, BTEX and VOCs concentrations at selected water quality stations remained below detection limits during all water sampling events. Therefore, surface water was not impacted by petroleum hydrocarbons.
- The Pb-210 and Ra-226 exceedances were generally found at locations in proximity of the Tailings Pond and in standing water within the main mine area. The recent radionuclides results (2016 - 2021) indicated that Pb-210 and Ra-226 concentrations within the Contact Lake receiving environment and in Great Bear Lake were consistently below or close to detection limit.

## 10.3 2022 Monitoring Program

The 2022 sampling stations at Contact Lake Mine were sampled in accordance with the GBL Sites PRMP (CIRNAC-CARD 2018c) (**Appendix A, Figure 7**). Reference station CL-8 serves as the applicable background station for the Contact Lake Mine site (per previous monitoring events).

**Table 10-1** summarizes the sampling stations, locations, parameters at the Contact Lake Mine site in 2022. Note that CL-29, located at the north shore of the Tailings Pond, was not required to be sampled in 2022 (contingency station for CL-3), as CL-3 was accessed. The comparison of the water quality between CL-3 and CL-29 indicated both locations represent the same Contact Lake Tailings Pond water (CIRNAC-CARD 2020).

**Table 10-1. Contact Lake Mine 2022 Sampling Stations**

Waterbody	Station ID	Water Type	Laboratory Analysis						SNP Station (Y/N)	Rationale
			General Chemistry	Total Metals	Dissolved Metals	PHC and BETX	Oil and Grease	Radio-nuclides		
Tailings Pond	CL-3	Surface grab	x	x	x	x		x	Y	Outflow flowing from Tailings Pond to stream
Contact Lake	CL-26	Aquatic, surface grab	x	x	x	x		x	Y	Contact Lake, near outflow of stream from tailings pond
Contact Lake	CL-8	Aquatic, surface grab	x	x	x			x	N	Background station of Contact Lake

## 10.4 Water Quality Results

The 2022 water quality analytical results for the Contact Lake Mine site are presented in **Appendix B Tables B-1 to B-3**. Historical and 2022 concentrations for selected parameters were plotted over time to illustrate long-term water quality (**Figure 10-1**). These selected parameters were either identified as COCs or used to provide general characterization for overall water quality. Field data and observations are presented in **Appendix C** and site photographs in **Appendix D**.

### 10.4.1 Aquatic Observation

Ground conditions in 2022 were consistent with those observed in 2021. The shoreline station at the tailings pond was only partially submerged, as cattails and other vegetation were readily visible. Ambient conditions during the mid afternoon of August 8 at sampling station CL-3 were sunny in the morning and 17°C temperature with calm winds.

Ambient conditions were sunny and temperature of 17°C, with light winds, causing small waves, during the early afternoon of August 8, 2022, which is when water quality samples for stations CL-8 and CL-26 were collected.

### 10.4.2 General Chemistry

CL-3 is an SNP station in the tailings pond area, which receives mine impacted water from upgradient waste rock and tailings. Similar to previous years, pH at CL-3 indicated circumneutral condition (8.11). Conductivity (221 µs/cm), hardness (114 mg/L) and TDS (146 mg/L) were elevated and higher than those in Contact Lake background values. As shown on **Figure 10-1**, conductivity in CL-3 is relatively stable over time, and generally 4 to 5 times higher than those in Contact Lake background station CL-8.

CL-26 is an SNP location at the Contact Lake nearshore, and water quality is representative of the receiving environment. Unlike CL-3, water quality at this location is generally consistent with Contact Lake background conditions, with low conductivity, hardness, and TDS.

Sulphide concentrations remained low and were close to detection limit at both CL-3 and CL-26. Sulphate concentrations at both stations remained low (<10 mg/L), which were consistent with background values.

With respect to ions and nutrients, ammonia, chloride, nitrate, and nitrite were below the associated CWQG-PAL guidelines. Although fluoride concentrations at CL-3 were consistently above the CWQG-PAL since 2008, the time-series plot (**Figure 10-1**) indicated a decreasing trend between 2017 and 2021 and slightly increasing trend in 2022. Fluoride concentrations at CL-26 met CWQG-PAL and were consistent with Contact Lake background ranges (i.e., 0.1-0.11 mg/L).

Dissolved organic carbon (DOC) concentrations at CL-3 and CL-26 were consistent with their previous results. In 2022, DOC concentrations at CL-3 and CL-26 were 12.6 mg/L and 2.36 mg/L, respectively. The comparison between total and dissolved concentrations indicate that organic matter is primarily present in dissolved phase.

### 10.4.3 Total and Dissolved Metals

Similar to previous years, total arsenic, copper, and uranium concentrations in tailings pond (CL-3) were consistently above the CWQG-PAL guidelines and generally one to two orders of magnitude higher than Contact Lake background ranges (**Figure 10-1**). In 2022, lower arsenic and copper concentrations were observed at CL-3, compared to 2021. Total uranium concentrations were generally consistent with historical ranges, and ranged from 35.8 to 45 µg/L.

Metal concentrations at CL-26 (**Figure 10-2**) were generally stable and consistent with the background conditions. Although there are minor variations in metal concentrations, these metals were generally within their historical ranges and well below CWQG-PAL guidelines.

The comparison between total and dissolved metal concentrations in all water samples indicated that metals were primarily present as dissolved phases.

### 10.4.4 Hydrocarbons

Based on findings of terrestrial PHC contamination reported at the main mine site, stations CL-3 and CL-26 were sampled for PHC F1-F4, and BTEX. Similar to 2018, 2019, 2020 and 2021 results, all sample results were below detection limits for these parameters and consistent with previous sampling events.

### 10.4.5 Radionuclides

To date, environmental criteria for radionuclides in water have not been developed for protection of aquatic species. The measured concentration of radionuclides in water has instead been compared to Canadian Guidelines for Drinking Water Quality (CGDWQ) published by Health Canada on behalf of the Federal-Provincial-Territorial Committee on Drinking Water (Health Canada, updated in 2020 version). This approach was applied during previous assessment and monitoring, ensuring the consistency in result evaluation.

Similar to previous years, CL-3 reported detectable concentrations of radium-226 during the 2022 sampling event, however, the concentrations met the CGDWQ Guidelines. All other radium-226 concentrations were below or very close to detection limits. At the discharge of mine water to Contact Lake (station CL-26), radium-226 concentration was below detection limit of 0.005 Bq/L. At reference station CL-8, radium-226 reported concentrations of below detection limit of 0.3 Bq/L. Radium-226 in the Contact Lake Field Blank was below detection limit of 0.2 Bq/L. In 2022, lead-210 was barely detectable at the tailings pond SNP station CL-3, and consistent with historical ranges (mean of 0.04 Bq/L). Lead-210 was below the detection limit at the nearshore SNP station CL-26 (<0.02 Bq/L).

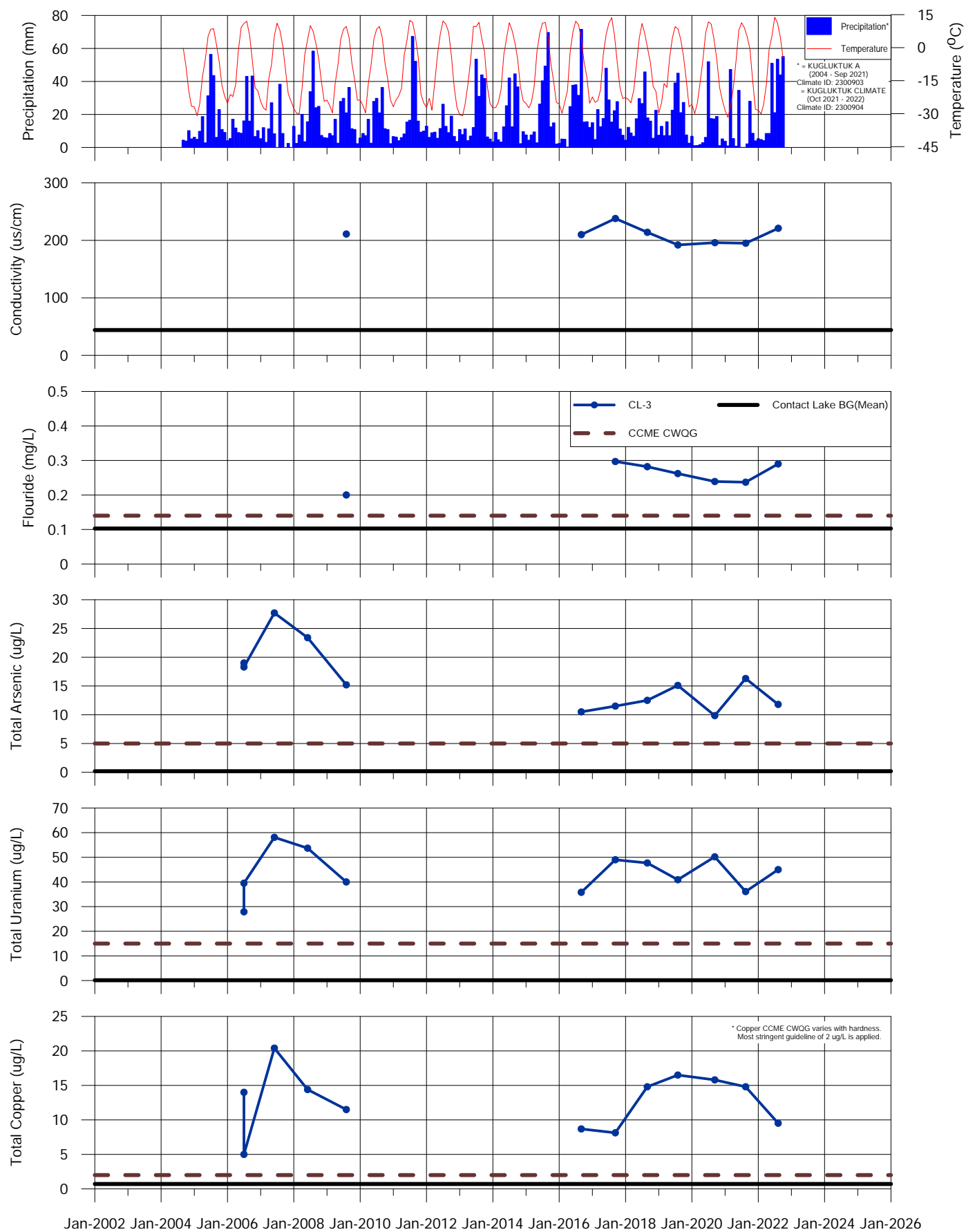


Figure 10-1. Time-series Surface Water Quality - Contact Lake (CL-3)

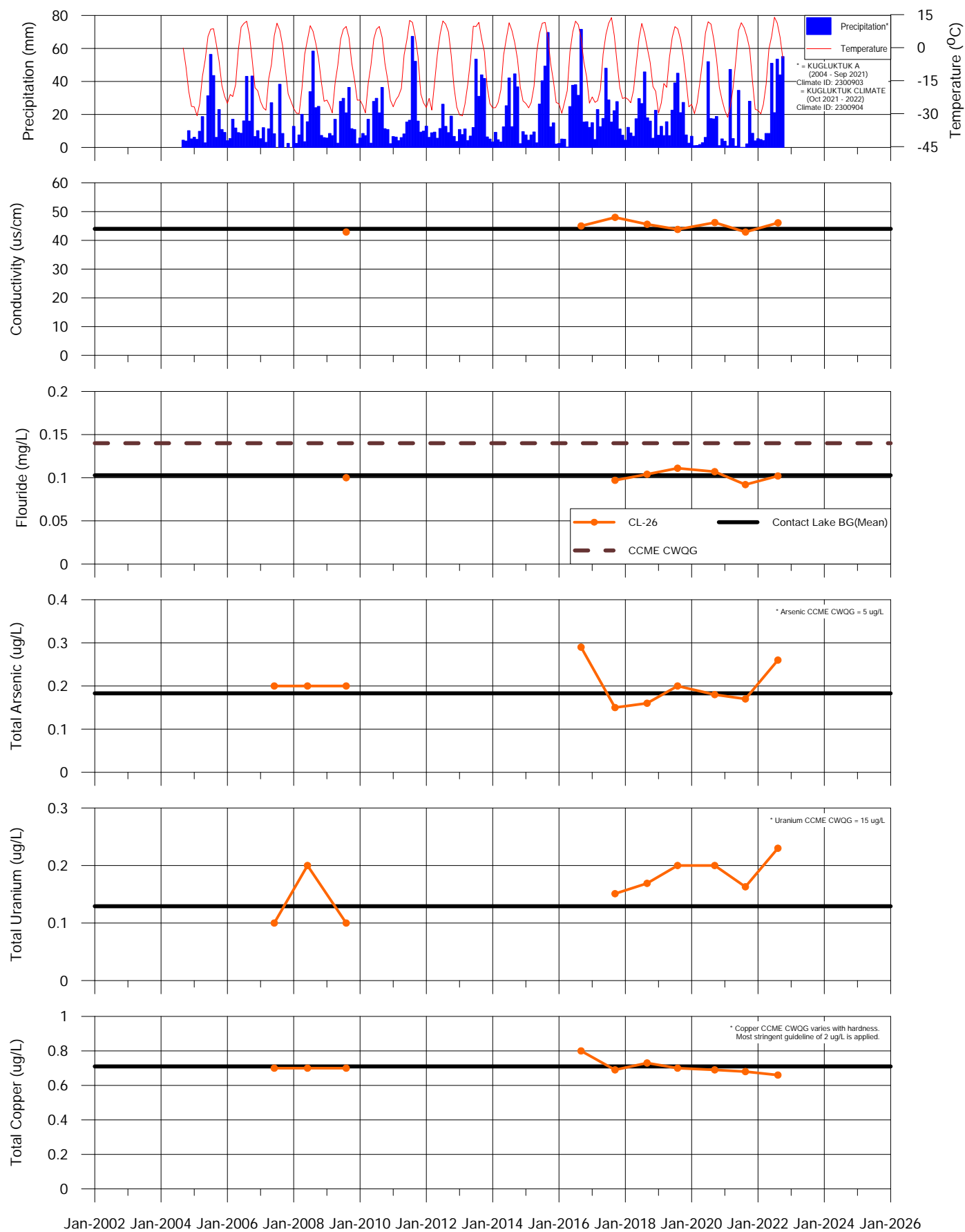


Figure 10-2. Time-series Surface Water Quality - Contact Lake (CL-26)

## 11. Smallwood Mine

### 11.1 Site Summary

The Smallwood Mine was a silver mine that operated in the 1970s and 1980s. Underground workings reached a total depth of approximately 120 m. From 1979 to 1983 approximately 18,000 t of ore was hauled from Smallwood Mine to Terra Mine for processing (SENES/SRK 2009).

An estimated 35,000 m<sup>3</sup> of waste rock is located downslope of the main mine portal and immediately upgradient of Smallwood Lake. A secondary, long and narrow pile extends north-east from the mine entrance (SENES 2008). Of this volume, about 1,600 m<sup>3</sup> appears to be several small piles of low-grade ore, left lying on top of the waste rock (SENES 2008).

The surface features include several mine openings, a ventilation and compressor plant, shacks, and trailers, one large fuel storage tank, and a waste rock pile at the mine entrance. None of the mine openings at Smallwood produce any water. (SENES 2008).

### 11.2 Smallwood Lake - Water Bodies, Drainage Pathways and Contaminant Concerns

Smallwood Mine is found on the northwest shore of Smallwood Lake and the main waste rock pile borders the shoreline (SLR 2017). Two connected upland lakes drain via an intermittent stream into the north end of Smallwood Lake, and a natural wetland named Timler Slough drains into its south end. Smallwood Lake discharges to the northeast into a large chain of lakes that subsequently drain into the Camsell River. Based on the review of contaminated areas and surface flow patterns at the Smallwood Mine site, a summary of the historical water quality findings, contaminant concerns and their identified drainage pathways is provided below (SLR 2017; CIRNAC 2019, 2020):

- There is one drainage pathway identified at Smallwood Mine site. The pathway originates from waste rock, and discharges to Smallwood Lake.
- The geochemical testing (Lorax 2006) indicated the waste rock could be a source of zinc and cadmium loadings to Smallwood Lake. Conclusions from the tests indicate that acidic conditions are possible, however current oxidation rates of the waste rock appear to be quite low as evidenced by the fact that the rock has been in place for more than 25 years and sulphate levels in Smallwood Lake below the waste rock pile are low (13 mg/L) and metals levels have been stable (SENES 2008).
- There remains some uncertainty as to whether tailings were deposited in Smallwood Lake. It has been reported that ore was transported to Terra Mine for milling, however a 2005 report indicated tailings were disposed of onsite. Contrarily, reporting from 2007 noted that there were no indications that ore was ever milled at Smallwood, or any evidence of tailings being deposited in the area (SLR 2017).
- Fluoride, total copper, lead, and zinc were identified as COCs, due to exceedance of CWQG-PAL guidelines or due to concentrations significantly above the background levels at multiple locations. The marginal exceedances of cadmium concentrations were only observed at station SM-1 (Smallwood Lake nearshore by waste rock) in 2017 and 2018, therefore cadmium was not considered as a COC.
- Hydrocarbon testing was only conducted in 2017, due to the potential concern of the terrestrial PHC contamination for waste rock piles. All selected water samples had results below detection limits, and therefore petroleum hydrocarbon is not considered as COC to Smallwood Lake.
- Radionuclides have not historically been sampled or identified as a COC at the Smallwood Mine site.

## 11.3 2022 Monitoring Program

The 2022 sampling stations at Smallwood Mine were included as Responsive Monitoring stations, in accordance with the GBL Sites PRMP (CIRNAC-CARD 2018c) (**Appendix A, Figure 8**). Although the sampling program at Smallwood Mine was not prescribed within the GBL Sites PRMP, sampling activities were included in the 2022 monitoring program to validate the elevated cadmium and zinc concentrations identified in SM-1 during the 2017 and 2018 monitoring events. Reference stations R-2 and R-3 serve as applicable background stations for all Silver Bear Sites (per previous monitoring events).

**Table 11-1** summarizes the sampling stations, locations, parameters at the Smallwood Mine site in 2022.

**Table 11-1. Smallwood Lake Mine 2022 Sampling Stations**

Waterbody	Station ID	Water Type	Laboratory Analysis					SNP Station (Y/N)	Rationale
			General Chemistry	Total Metals	Dissolved Metals	PHC and BETX	Oil and Grease		
Smallwood Lake Nearshore	SM-1	Aquatic, surface grab	x	x	x	x		N	Waste rock source monitoring
	SM-2	Aquatic, surface grab	x	x	x	x		N	Waste rock source monitoring
Smallwood Lake	SM-6A	Aquatic, surface grab	x	x	x	x		N	Receiving environment further downgradient of mine area
	SM-6B	Aquatic, at depth of 4 m	x	x	x	x		N	Receiving environment further downgradient of mine area
Belachey Lake	R-2	Aquatic	x	x	x			N	Background of Camsell River system
Tutcho Lake	R-3	Aquatic	x	x	x			N	Background of Tutcho Lake

## 11.4 Water Quality Results

The 2022 water quality analytical results for the Smallwood Mine site are presented in **Appendix B, Tables B-1 to B-3**. Historical and 2022 concentrations for selected parameters were plotted over time to illustrate long-term water quality (**Figure 11-1** and **Figure 11-2**). These selected parameters were either identified as COCs or used to provide general characterization for overall water quality. Field data and observations are presented in **Appendix C** and site photographs in **Appendix D**.

### 11.4.1 Aquatic Observations

Smallwood Lake conditions during the 2022 field program appeared consistent with earlier sampling events, with water levels below the Smallwood dock. Smallwood Lake was generally clear and consistent with earlier classification of primarily oligotrophic conditions, which is defined as lakes with low accumulation of dissolved nutrients that generally host very little or no aquatic vegetation.

Ambient conditions were sunny, with some clouds, 17°C temperature and light winds, during the morning of August 8, 2022, which is when water quality samples for stations SM-1 and SM-2 were collected.

Ambient conditions were sunny, with light winds, causing small waves, during the early afternoon of August 8, 2022, which is when water quality samples for station SM-6 were collected.



### 11.4.2 General Chemistry

SM-1 and SM-2 are shoreline samples immediately downgradient of the mine area and waste rock piles. SM-6A and SM-6B are located downgradient of waste rock area and are considered to represent the receiving environment. In 2022, water quality at these locations were generally consistent, and characterized with circumneutral pH (7.73-7.77), low conductivity (106 to 112  $\mu\text{S}/\text{cm}$ ), low hardness (50-51 mg/L) and low TDS (<100 mg/L). As shown on **Figure 11-1**, conductivity and hardness values in all water samples were slightly higher than those in Tutcho Lake (R-3) background conditions.

Sulphide concentrations were below detection limit for all water samples and sulphate concentrations were generally below 15 mg/L. The low sulphate concentrations, together with the circumneutral pH values indicated that surface water was not likely impacted by acidic mine drainage.

With respect to anions and nutrients, ammonia, chloride, nitrate, and nitrite were all below the associated CWQG-PAL guidelines. In 2022, fluoride concentrations exceeded the CWQG-PAL guideline of 0.12 mg/L in all water samples, and ranged from 0.256 to 0.264 mg/L. These concentrations are higher than the mean value reported at reference stations (~ 0.150 mg/L).

In 2022, dissolved organic carbon (DOC) concentrations in all samples were consistent with their previous results, and ranged from 6.80 to 7.35 mg/L. The comparison between total and dissolved concentrations indicate that organic matter is primarily present in dissolved phase.

### 11.4.3 Total and Dissolved Metals

In 2022, all metal concentrations in SM-6B met CWQG-PAL guidelines. However, water quality in SM-1 and SM-2 exceeded the long-term CWQG-PAL guideline for dissolved zinc and water quality in SM-6A marginally exceeded the long-term CWQG-PAL guideline for total copper and dissolved zinc. Note that the dissolved zinc guidelines were updated in 2018, and dependent on pH, hardness, and dissolved organic carbon. During the 2022 sampling event, dissolved zinc concentration at SM-1 and SM-2 were 25.5  $\mu\text{g}/\text{L}$  and 44.5  $\mu\text{g}/\text{L}$ , respectively, which was higher than the calculated guideline of 16  $\mu\text{g}/\text{L}$ .

As shown on **Figure 11-2**, total zinc concentrations in SM-1 have exhibited some variability, with a peak concentration of 82.7  $\mu\text{g}/\text{L}$  observed in 2017. Since 2018, total zinc concentrations have remained consistently below 60  $\mu\text{g}/\text{L}$ , and no increasing trend has been observed. In 2022, the total zinc concentration at SM-1 was 40  $\mu\text{g}/\text{L}$ , which was nearly twice the concentration measured in 2021. Total zinc concentrations in SM-2, SM-6A and SM-6B were generally lower than that in SM-1, but consistently higher than background conditions. There was an exception for total zinc concentrations in SM-2, which was marginally higher than SM-1 in 2022. Total zinc concentrations in SM-6A were relatively stable between 2005 and 2009, but exhibited an increasing trend between 2016 and 2020, from 11  $\mu\text{g}/\text{L}$  to 23.6  $\mu\text{g}/\text{L}$  and then decreased to 14.9  $\mu\text{g}/\text{L}$  in 2021 and later increased to 49.8  $\mu\text{g}/\text{L}$  in 2022.

Similar to previous years, total arsenic concentrations at all locations were generally within or below background levels. Total copper concentrations in all water samples were comparable (<2  $\mu\text{g}/\text{L}$ ) and slightly above the Tutcho Lake background conditions except for SM-6A, collected from surface, which reported a marginal total copper exceedance (2.48  $\mu\text{g}/\text{L}$ ). Total copper concentrations in SM-1 exhibited an increasing trend between 2016 and 2022, from 1.6 to 1.9  $\mu\text{g}/\text{L}$ . However, the slight increase in concentrations may be the result of drier weather conditions in 2022.

The increased cadmium concentration was detected in SM-1 during the 2017 and 2018 sampling event, and marginally exceeded the long-term CWQG-PAL. In 2021, total cadmium concentration in SM-1 continued decreasing trend from ~0.1  $\mu\text{g}/\text{L}$  to 0.118  $\mu\text{g}/\text{L}$ , and met the applicable CWQG-PAL of 0.9  $\mu\text{g}/\text{L}$ . Total cadmium concentrations in SM-2 increased in 2022 and reached 0.102 but stayed below the CWQG-PAL guideline. Total cadmium concentrations in SM-6A and SM-6B were generally below 0.05  $\mu\text{g}/\text{L}$ .

Given the variable concentration trends in zinc results in previous years, water samples from SM-1, SM-2, and SM-6 should continue to be monitored to evaluate potential effects of waste rock on water quality prior to and after the remediation works.

#### 11.4.4 Hydrocarbons

In 2022, water samples collected from SM-1, SM-2, SM-6A and SM-6B were submitted for hydrocarbon analysis. All 2022 sample results were below detection limits for these parameters and consistent with previous sampling results.

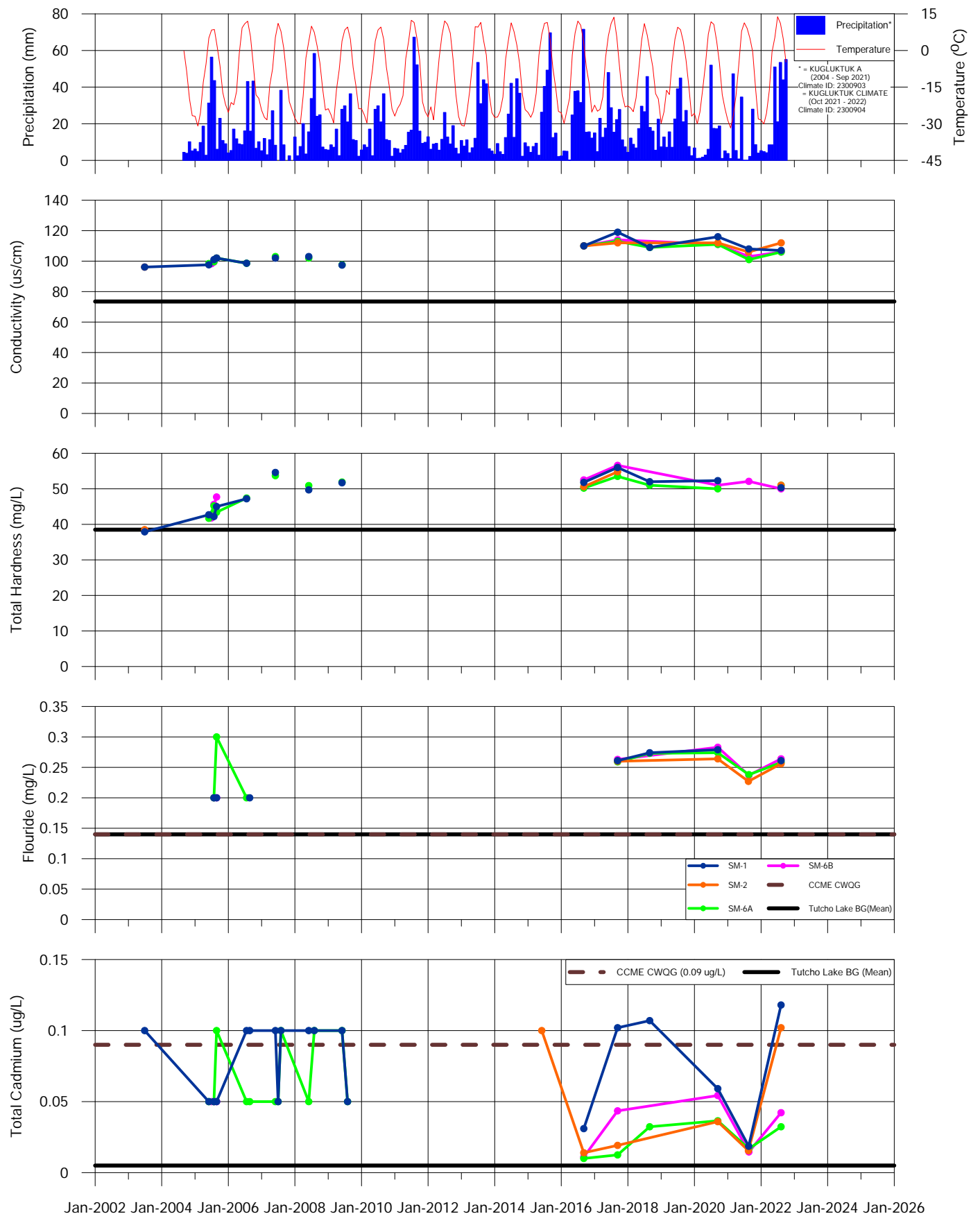


Figure 11-1. Time-series Surface Water Quality - Smallwood Lake

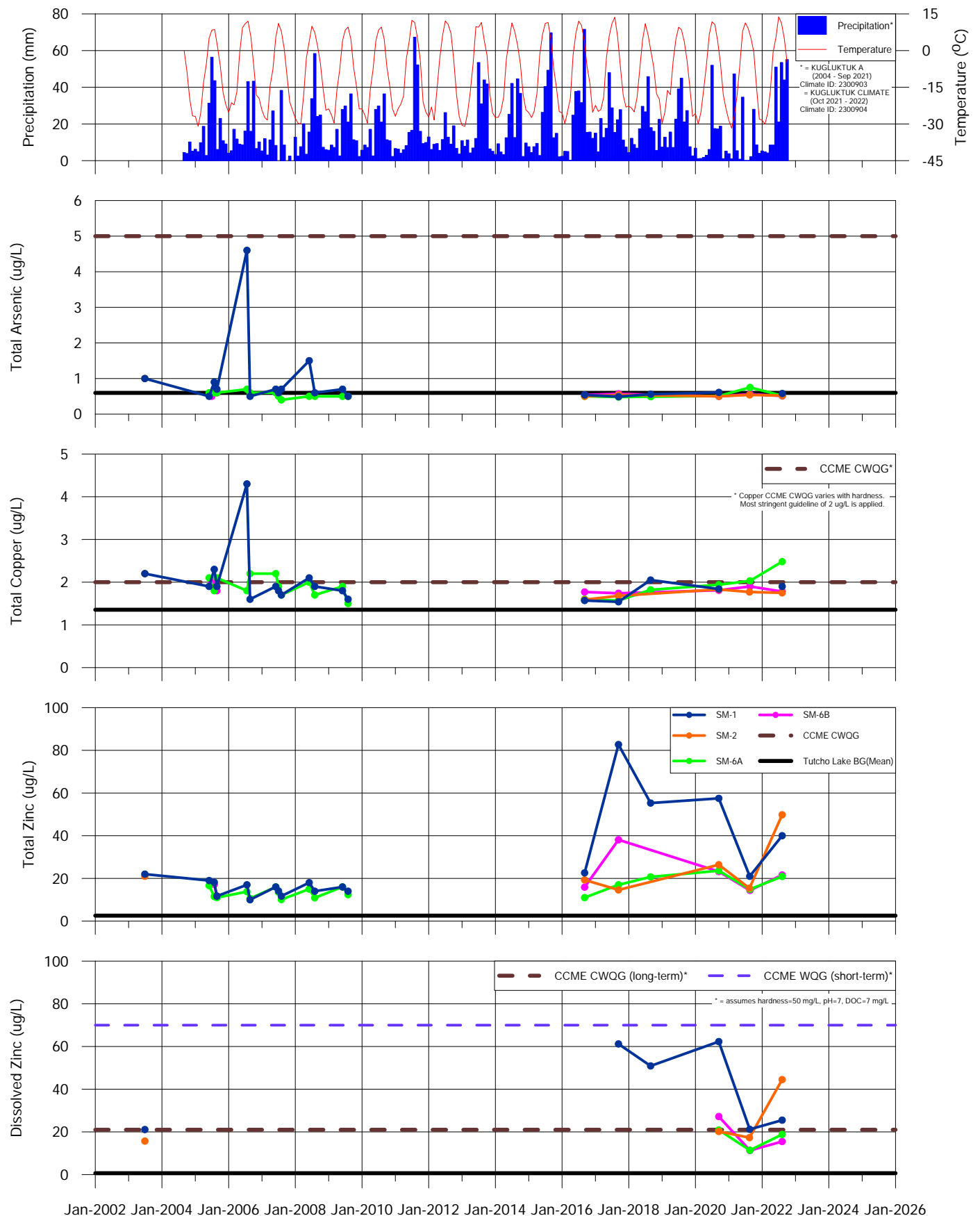


Figure 11-2. Time-series Surface Water Quality - Smallwood Lake

## 12. Conclusions and Recommendations

The following conclusions and recommendations are drawn based on our review, analysis, and interpretation of the 2022 surface water quality data for the GBL Sites. Notable results in water quality conditions and recommendations for continued evaluation are presented in **Table 12-1** below.

### 12.1 Conclusions

#### **Background/Reference Stations:**

- In summary, all parameters at the Silver Bear Mines background stations met applicable CWQG-PAL guidelines, except for fluoride in R-2 (Camsell River background) and R-3 (Tutcho Lake background). Water quality at all background stations were relatively stable over time and have not been impacted by mining activities. Although a slight increase in fluoride concentrations were observed at background stations, their concentrations are still within historical ranges and, because the area has not been impacted from anthropogenic activity, the variations can be safely attributed to natural geochemical fluctuations of bedrock mineralogy weathering.
- Water quality data collected in R-2 was within Camsell River background ranges and characterized by circumneutral to slightly alkaline pH (7.69 – 8.07), sulphate (<15 mg/L) and slightly elevated conductivity (101-160 µs/cm). Fluoride concentrations in R-2 were consistently above the CWQG-PAL, with the mean value of 0.15 mg/L. Metal concentrations were generally below detection limits or remained well below CWQG-PAL.
- Water quality data collected in R-3 in 2022 was within Tutcho Lake background ranges. Water quality at R-2 and R-3 were generally comparable, but conductivity values at R-3 were typically below 100 µs/cm. Metal concentrations were generally below detection limits or remained well below CWQG-PAL.
- Water quality at the Contact Lake reference station (CL-8) in 2022 was within historical range, characterized with low conductivity (<50 µs/cm) and low major ions (Ca, Mg, Na, SO<sub>4</sub>, Cl) concentrations. Fluoride concentrations in CL-8 ranged from 0.097 to 0.111 mg/L, which met applicable CWQG-PAL guideline. Metal concentrations were generally below detection limits or below CWQG-PAL. Radionuclides concentration of Ra-226 remained below the detection limit in 2022 (<0.3 Bq/L). Lead-210 concentration was below detection limit of 0.02 Bq/L.

#### **Terra Mine:**

- Similar to previous years, water quality in SNP stations T-8 (in Ho-Hum TCA) and T-10 (downstream of the Ho-Hum TCA and wetland area in Moose Bay), met the Water Licence EQC in 2022.
- General parameters in T-8 and T-10 were consistent with their historical ranges, with circumneutral to alkaline pH and low sulphate concentrations. Similar to previous years, conductivity, hardness, and TDS in T-8 were slightly higher than those in T-10, where water quality is generally comparable to Camsell River background conditions.
- Fluoride concentrations exceeded the CWQG-PAL guideline of 0.12 mg/L in all samples at T-8, T-10 as well as reference stations (R-2 and R-3). Fluoride concentrations in T-8, within the Ho Hum TCA, were approximately 5 times higher than Camsell River background levels. Local fluoride-rich mineralogical effects have likely been concentrated by mining activities and/or tailings deposition, resulting in particularly elevated fluoride concentrations in Ho Hum TCA at the Terra Mine site.
- Total arsenic and copper are identified as primary contaminant concerns in Terra Mine site. Total aluminum and iron in T-10 decreased in comparison to 2021 and were below the CWQG-PAL. Similar to previous years, arsenic and copper concentrations in T-8 exceeded CWQG-PAL guidelines, due to the presence of tailings (submerged and shoreline) and waste rock.

- Comparison between 2021 and 2022 water quality data indicated consistent or slightly increased arsenic and copper concentrations at T-8, may be due to the drier climate conditions. Long-term water quality data (2002-2022) indicated that arsenic concentrations in Ho-Hum TCA decreased over time. However, total copper concentrations in Ho-Hum TCA were slightly increasing over time.
- Total arsenic concentrations at lake bottom (i.e., T-8C) were slightly higher than those in surface (i.e., T-8A) and middle of the lake (i.e., T-8B), while total copper concentrations were generally consistent with depth. The minimal changes in concentrations with depth indicate that the Ho-Hum TCA is well mixed.
- Downstream of the wetland area in Moose Bay, at T-10 total arsenic and copper concentrations were approximately four times and 1.5 times lower than concentrations in 2021, respectively; however, all metal concentrations met all applicable CWQG-PAL guidelines and was generally consistent with Camsell River background conditions.
- All PHC, BTEX and Oil and Grease samples from the Tailings Pond (T-8) and Moose Bay (T-10) were below detection limits.

### **Northrim Mine:**

- Similar to previous years, copper (2.48 µg/L) and arsenic (6.2 µg/L) concentration at NO-7 in Hermandy Lake marginally exceeded the CWQG-PAL guidelines, due to the submerged tailings in Hermandy Lake TCA. In 2022, lead (0.274 µg/L) concentration decreased ten-times and met the CWQG-PAL guidelines. At the discharge location (NO-6) of the Hermandy drainage to Camsell River (i.e., receiving environment), all metals were below CWQG-PAL guidelines, except for total copper. However, the marginal copper exceedance is primarily due to low hardness value.
- Similar to previous years, fluoride concentration at NO-6 was marginally above CWQG-PAL of 0.12 mg/L but were within the Silver Bear Mine regional background ranges (i.e., 0.15 mg/L), and not related to contaminant impact. Fluoride concentration at NO-7 location decreased to marginally below CWQG-PAL in 2022.
- General parameter concentrations in NO-6 and NO-7 2022 samples were consistent with their historical ranges, with circumneutral to alkaline pH and low sulphate concentrations. pH values at all stations were above 7.8, indicating sufficient buffering capacity in water bodies and surface water and acid rock drainage is not likely a concern for this site.
- Metal concentrations in NO-6 and NO-7 were consistent with historical results at these stations. Total arsenic, lead, and zinc concentrations in 2022 were slightly lower than those in 2021, and the concentrations were still within their historical ranges.
- Water quality at NO-6 is consistent with Camsell River background ranges, indicating minimum or no impact from the Northrim mine area.
- All PHC and BTEX samples from the Hermandy Lake (NO-7) and Camsell River (NO-6) stations were below detection limits.

### **Norex Mine**

- Water quality at the west waste rock seep location (NX-3) had slightly alkaline pH (>7.5) and noticeably lower conductivity, hardness, TDS, and sulphate concentrations, as compared to 2021 results. Other metal concentrations including total arsenic, aluminum, cadmium, selenium, and zinc increased compared to reported values in 2021, and exceeded CWQG-PAL. However, the elevated total metals have been inferred to be attributed to high TSS and turbidity, as solid particles are a source of inorganic elements. The comparison between total and dissolved metals also supports that most of metals are primarily present as solid phase, and the dissolved metal concentrations were generally comparable or lower than 2021 values. The elevated total metal concentrations in 2022, together with high TSS and turbidity indicated that the water sample was disturbed during sampling collection, due to the presence of low volume of water in the pooled area and likely sediment entrainment of metal-bearing solids. Overall, the very low volume of water present at NX-3, which

likely declines with dry weather conditions over the course of the summer, is also interpreted to be a primary reason for elevated contaminant concentrations at this location.

- Similar to previous years, fluoride concentrations at NX-3 and NX-12 were above the CWQG-PAL of 0.12 mg/L. Fluoride concentration in 2022 (0.162 mg/L) at NX-12 was within its historical ranges and was consistent with Camsell River background concentrations. At NX-3, the 2022 fluoride concentration at NX-3 was 0.413 mg/L, approximately 1.3 times higher than reported in 2021, but still within the historical range reported in 2017, 2018, and 2019.
- In 2022, consistent with historical data, water quality at Norex Camsell River station (NX-12) met CWQG-PAL guidelines and was comparable to Camsell River background concentrations.
- A single detectable result was reported for F2 fraction hydrocarbons in west waste rock seep sample NX-3 during the 2017 sampling event. Similar to 2018, 2019, 2020, and 2021, all PHC and BTEX samples from NX-3 and NX-12 were below detection limits in 2022.

### **Contact Lake**

- General parameters in CL-3 (tailings pond) and CL-26 (discharge location) were consistent with their historical ranges, with circumneutral to alkaline pH and low sulphate concentrations. Similar to previous years, conductivity, hardness, and TDS in CL-3 were slightly higher than those in CL-26, where water quality is generally comparable to Contact Lake background conditions (CL-8).
- Similar to previous years, fluoride concentrations in tailings pond (CL-3) exceeded the CWQG-PAL, though not in the Contact Lake reference location (CL-8). Fluoride concentrations in CL-3 have continued to slowly decrease since 2016, from 0.3 to 0.239 mg/L and slightly increased in 2022 to 0.29 mg/L.
- The waste rock and tailings deposited in Main Mine Area and Tailings Pond are the primary sources of metal loadings. Total arsenic, copper, and uranium concentrations in tailings pond (CL-3) were consistently above the CWQG-PAL guidelines and generally one to two orders of magnitude higher than Contact Lake background ranges. Lower arsenic and copper concentrations were observed in CL-3, compared to 2021. Although uranium concentration was slightly higher than that in 2021, , but generally within historical ranges.
- Metal concentrations in CL-26 were generally stable and consistent with the background conditions. All metal concentrations met the CWQG-PAL guidelines, which is consistent with previous sampling events.
- Similar to previous years, all PHC and BTEX samples from CL-3, CL-26 and CL-8 were below detection limits.
- Similar to previous years, the tailings pond sample location (CL-3) reported detectable Ra-226 concentrations. In 2022, the radium-226 met the CGDWQ Guidelines. Ra-226 concentrations generally decreased along the drainage pathway and were close to the detection limit at the discharge location (CL-26) and background station (CL-8). At station CL-3, lead-210 reported concentration of 0.04 Bq/L and was either at or below detection limit at stations CL-26 and CL-8.

### **Smallwood Mine**

- During the 2022 sampling event, dissolved zinc concentration at SM-1 and SM-2 in the nearshore of Smallwood Lake were 25.5 µg/L and 44.5 µg/L, which was higher than the calculated guideline of 16 µg/L.
- Total zinc concentrations in SM-1 remained below 20 µg/L before 2009 and increased significantly to 82.7 µg/L during 2017 sampling event. In 2018, 2020 and 2021, total zinc concentrations remained below 60 µg/L with no increasing trend was observed. In 2022, total zinc concentrations slightly increased compared to 2021 but remained below 60 µg/L.
- Total zinc concentrations in SM-6A and SM-6B offshore in Smallwood Lake were generally lower than that in SM-1, but consistently higher than background conditions. Total zinc concentrations in SM-2 in the nearshore was marginally higher than that in SM-1. Total zinc concentrations in SM-6A were



relatively stable between 2005 and 2009, but exhibited an increasing trend between 2016 and 2020, from 11 µg/L to 23.6 µg/L and then decreased to 14.9 µg/L in 2021 and later increased to 49.8 µg/L in 2022.

## 12.2 Recommendations

- It is recommended that the field blank for the Silver Bear sites be collected from a standard location on site.
- The sampling locations NX-2 and NX-3 at the Norex waste rock pile toe have been demonstrated to be highly variable in terms of water volume and therefore water quality concentrations over time. However, neither one of these sample locations constitutes actual surface water bodies; they are small areas of ponded water on the surface of mostly saturated ground of the wetland terrain that surround the waste rock pile. The ponds vary in volume dependent on time of year, precipitation levels of that year, and degree of ground saturation. Because of their small, variable, and discontinuous nature along the toe of the waste rock pile, they are not representative of chronic, overall contaminant loading to the downgradient watershed. As such, the contaminant concentrations measured at these locations is not an accurate measure of the true impact and risk to the environment. In addition, the photographic documentation of the NX-3 location documents the decline in water volume over time, which translates directly to a decreased risk of contaminant migration. It is therefore suggested that water samples from the NX-3 sample location and SNP backup NX-2 sample location are of limited value.
- The elevated level of total and dissolved zinc in the Smallwood Lake samples should continue to be monitored, with water quality sample collection at SM-1, SM-2, and SM-6.

**Table 12-1. GBL Sites 2022 Water Quality Monitoring – Summary of Key Results and Recommendations**

Water Quality Stations	Results
GBL Sites Water Quality	<b>Key Results</b>
Silver Bear Reference Stations	<ul style="list-style-type: none"> <li>All parameters at background stations met applicable CWQG-PAL guidelines, except for fluoride in R-2 and R-3, which is attributed to regionally high concentrations of fluorine containing minerals. Relevant for ongoing evaluation of fluoride concentrations at Silver Bear Mine sites.</li> </ul>
Terra Mine – T-8	<ul style="list-style-type: none"> <li>Fluoride concentrations in T-8 (Ho Hum TCA) were approximately 5x higher than Camsell River background levels, but within its historical ranges. The high concentrations are likely due to mining and milling activities concentrating local mineralogical effects.</li> <li>Similar to previous years, arsenic and copper concentrations in T-8 exceeded CWQG-PAL guidelines. The comparison between 2021 and 2022 water quality data indicated consistent or slightly increased in arsenic and copper concentrations at T-8. Minor increases may be due to the seasonal variations.</li> <li>Long-term water quality data (2002-2022) indicated that arsenic concentrations in Ho-Hum TCA decreased over time. However, total copper concentrations in Ho-Hum TCA were slightly increasing over time.</li> </ul>
Terra Mine – T-10	<ul style="list-style-type: none"> <li>Downstream of the wetland area in Moose Bay, at T-10, total arsenic and copper concentrations were approximately four times and 1.5 times lower than concentrations in 2021; however, all metal concentrations at T-10 met all applicable CWQG-PAL guidelines and were generally consistent with Camsell River background conditions.</li> </ul>
Northrim Mine – NO-7	<ul style="list-style-type: none"> <li>Similar to previous years, copper (2.48 µg/L) and arsenic (6.2 µg/L) concentrations at NO-7 in Hermandy Lake marginally exceeded the CWQG-PAL guidelines, due to the submerged tailings in Hermandy Lake TCA. In 2022, lead (0.274 µg/L) concentration decreased ten-times and met CWQG-PAL guidelines.</li> <li>Fluoride concentration at NO-7 location decreased to marginally below CWQG-PAL to 0.12 mg/L in 2022.</li> </ul>
Northrim Mine – NO-6	<ul style="list-style-type: none"> <li>At the discharge location (NO-6) of the Hermandy drainage to Camsell River (i.e., receiving environment), all metals were below CWQG-PAL guidelines, except for copper.</li> <li>Similar to previous years, fluoride concentration at NO-6 was marginally above CWQG-PAL of 0.12 mg/L but were within the Silver Bear Mine regional background ranges (i.e., 0.15 mg/L), and not related to contaminant impact. Water quality at NO-6 is consistent with Camsell River background ranges, indicating minimum or no impact from the Northrim mine area.</li> </ul>
Norex Mine – NX-3	<ul style="list-style-type: none"> <li>Fluoride concentration in NX-3 reached 0.413 mg/L in 2022, approximately 1.3 times higher than reported in 2021 and in range with reported in 2017, 2018, 2019, and 2020.</li> <li>Total arsenic concentration at NX-3 reached 531 µg/L, which exceeded the CWQG-PAL and was approximately 10-20 times higher than concentrations reported between 2016 and 2019 and 1.2 times higher than reported in 2021. Total aluminium concentrations at NX-3 increased to 731 µg/L, which exceeded the CWQG-PAL, and approximately seven times compared to reported values in 2021. Total cadmium reached 1.43 µg/L but met the CWQG-PAL. Total selenium concentrations decreased to 0.64 µg/L which met the CWQG-PAL, and approximately half the concentrations reported in 2021.</li> <li>Dissolved metal concentrations at NX-3 were generally one to three orders of magnitude less than total metals, indicating that metals are primarily present in total phase. The comparison of dissolved metal concentrations between 2021 and 2022 indicated that dissolved metal concentrations in NX-3 in 2022 were generally comparable or lower than</li> </ul>

Water Quality Stations	Results
	<p>those measured in 2021. Dissolved zinc concentrations decreased to 14.7 µg/L which met the CWQG-PAL, and was approximately 77 times lower than those reported in 2021.</p> <ul style="list-style-type: none"> <li>The elevated total metal concentrations in 2022, together with high TSS and turbidity, combined with very low water volume for sampling indicated that the water sample was impacted by sediment entrainment during sampling collection.</li> </ul>
Contact Lake – CL-3	<ul style="list-style-type: none"> <li>Similar to previous years, fluoride concentrations in tailings pond (CL-3) exceeded the CWQG-PAL. Fluoride concentrations in CL-3 have continued to slowly decrease since 2016, from 0.3 to 0.239 mg/L and slightly increased in 2022 to 0.290 mg/L.</li> <li>Total arsenic, copper, and uranium concentrations in the tailings pond (CL-3) were consistently above the CWQG-PAL guidelines and generally one to two orders of magnitude higher than Contact Lake background ranges.</li> <li>Similar to previous years, Tailings pond (CL-3) reported detectable Ra-226 concentrations; however in 2022, the concentrations met the CGDWQ Guidelines.</li> </ul>
Contact Lake – CL-26	<ul style="list-style-type: none"> <li>Similar to previous years, fluoride concentrations did not exceed the CWQG-PAL in the Contact Lake reference location (CL-8).</li> <li>Metal concentrations in CL-26 were generally stable and consistent with the background conditions. All metal concentrations met the CWQG-PAL guidelines, which is consistent with previous sampling events.</li> </ul>
Smallwood Mine – SM-1	<ul style="list-style-type: none"> <li>During the 2022 sampling event, the dissolved zinc at SM-1 in the nearshore of Smallwood Lake was 25.5 µg/L, which was higher than the calculated CWQG-PAL of 16 µg/L.</li> </ul>
Smallwood Mine – SM-2 and SM-6	<ul style="list-style-type: none"> <li>During the 2022 sampling event, dissolved zinc at SM-2 in the nearshore of Smallwood Lake and at SM-6A offshore (surface) were 44.5 and 18.8 µg/L, respectively, which are higher than the calculated CWQG-PAL 16 µg/L.</li> <li>Total copper at SM-6A also exceeded the CWQG-PAL guideline.</li> <li>Total zinc concentrations in SM-6A and SM-6B offshore in Smallwood Lake were generally lower than that in SM-1, but consistently higher than background conditions.</li> <li>Total zinc concentrations in SM-2 in the nearshore was marginally higher than that in SM-1.</li> </ul>
GBL Sites Water Quality	<b>Recommendations</b>
Norex Mine	<ul style="list-style-type: none"> <li>The review of the visual changes in water volume at NX-3 over time indicates that this location is not an appropriate representative sample location to assess extent of potential contaminant loading to the overall environment. There is no immediately downgradient surface water body at Norex from which to accurately monitor ecosystem chronic loading from the adit discharge or waste rock pile. Neither NX-3 or NX-2 has consistent water volume present and they are not true surface water bodies, but rather ponded or puddled water of localized extent. It is therefore suggested that only water samples at the NX-12 station at the Camsell River are of value.</li> </ul>
Contact Lake	<ul style="list-style-type: none"> <li>The elevated concentration of radium-226 at CL-3 (Contact Lake tailings) should continue to be evaluated for potential increasing trend in concentrations, with responsive sampling at other stations as required.</li> <li>The lowest detection limits for radium-226 and Lead-210 should be utilized for all required water samples to allow for direct comparison of analyzed results.</li> </ul>
Smallwood Mine	<ul style="list-style-type: none"> <li>The elevated level of total zinc in the Smallwood Lake sample locations (SM-1, SM-2, and SM-6) should continue to be monitored, with responsive water monitoring again in 2023.</li> </ul>

## 13. References

AECOM Canada Ltd. (AECOM). 2014. Issued for Tender Specifications for the Environmental Site Remediation at Great Bear Lakes Sites, NWT. AECOM Canada Ltd. Project No. R.015211.014. Project No. 60310225. April 8, 2014.

AECOM Canada Ltd. (AECOM). 2019. Great Bear Lake Sites Remedial Plan Summary. Produced for Public Services and Procurement Canada. Project No. 60559152 (400).

AECOM Canada Ltd. (AECOM). 2020. Great Bear Lake Sites Historical Air Photo Review. Prepared for Public Services and Procurement Canada. Project No. March 2020.

AECOM. 2021a. Great Bear Lake Sites Supplemental Assessment – Ecological Habitat and Geotechnical Assessment for Drainage Restoration. Prepared for Public Services and Procurement Canada. Project No. 60639516. March 2021.

AECOM. 2021b. Great Bear Lake Sites Pre-Remediation – 2020 Water Quality Monitoring Program. Prepared for Public Services and Procurement Canada. 60639516. March 2021.

AECOM. 2022. Great Bear Lake Sites Pre-Remediation – 2021 Water Quality Monitoring Program. Prepared for Public Services and Procurement Canada. 60639516. March 2022.

Arcadis Canada Inc. (Arcadis). 2016. *2015 Water Quality Monitoring of Terra Mine Report*. Prepared for Public Works and Government Services Canada. March 2016.

Canadian Council of Ministers of the Environment (CCME). 1999. *Canadian Water Quality Guidelines for the Protection of Aquatic Life – Introduction*. In: Canadian Environmental Quality Guidelines, 1999, Canadian Council of Ministers of the Environment, Winnipeg.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) – Contaminants and Remediation Division (CIRNAC-CARD). 2019. *Great Bear Lake Sites – 2018 Annual Water Licence Report (#S17L8-002) FINAL V2*. Prepared for the Sahtu Land and Water Board. May 2019.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) – Contaminants and Remediation Division (CIRNAC-CARD). 2020. *Great Bear Lake Sites – 2019 Annual Water Licence Report (#S17L8-002) FINAL V2*. Prepared for the Sahtu Land and Water Board. March 2020.

DXB Project Inc. (Canada) Ltd. (DXB). 2018. Great Bear Lake Sites - 2017 Annual Water Licence Report (# S17L8-002). Prepared for Indigenous and Northern Affairs Canada – Contaminants and Remediation Division. May 2018.

Health Canada. 2009. *Guidelines for Canadian Drinking Water Quality – Guideline Technical Document – Radiological Parameters*. May 2009.

Hemmera Envirochem Inc. (Hemmera). 2015. *Mass Balance and Flux Estimates for Arsenic Environmental Loading to Ho Hum Lake and the Camsell River from the Silver Bear Terra Mine site, Northwest Territories, Canada – Draft Report*. Prepared for Public Works and Government Services Canada, March 2015.

Indigenous and Northern Affairs Canada – Contaminants and Remediation Division (INAC-CARD). 2018a. *Great Bear Lake Sites – 2017 Annual Water Licence Report (#S17L8-002)*. Prepared for the Sahtu Land and Water Board. March 2018.

Indigenous and Northern Affairs Canada – Contaminants and Remediation Division (INAC-CARD). 2018b. Great Bear Lake Sites – Quality Assurance and Quality Control Plan V2. Prepared for the Sahtu Land and Water Board. April 2018.

Indigenous and Northern Affairs Canada – Contaminants and Remediation Division (INAC-CARD). 2018c. Great Bear Lake Sites – *Great Bear Lake Sites – Pre-Remediation Monitoring Plan FINAL* V2. Prepared for the Sahtu Land and Water Board. June 2018.

Indian and Northern Affairs Canada - Water Resources Division (INAC-WRD). 2011. *Silver Bear Mine Sites, Northwest Territories Water Quality Monitoring Program – 2009; Terra, Norex, Smallwood, Northrim, Contact Lake and El Bonanza Mines – Final Report*. Prepared for Contaminants and Remediation Directorate, Indian and Northern Affairs Canada and Public Works and Government Services Canada. January 2011.

Indian and Northern Affairs Canada - Water Resources Division (INAC-WRD). 2014. *2013 Water Quality Monitoring of Terra Mine, Northwest Territories, Canada*. Prepared for Contaminants and Remediation Directorate, Indian and Northern Affairs Canada. Draft Report. February 2014.

Indian and Northern Affairs Canada – Contaminants and Remediation Directorate in association with SENES Consultants Ltd. (INAC-CARD and SENES). 2008. *Contact Lake Mine Remedial Action Plan*. March 2008.

Lorax Environmental, 2006. Silver Bear Mines Geochemical Assessment. Prepared for Indian and Northern Affairs Canada. Final Report.

Low-Level Radioactive Waste Management Office (LLRWMO), AECL. 1998. Sawmill Bay 1997 Waste Removal Project.

MacDonald, D.D., Levy, D.A., Czarnecki, A., Low, G. & Richea, N. 2004. *State of the Aquatic Knowledge of Great Bear Lake Watershed*. Prepared for Water Resources Division – Indian and Northern Affairs Canada. January.

Mackenzie Valley Land and Water Board (MVLWB). 2011. *Water and Effluent Quality Management Policy*. March.

SENEs Consultants Ltd. (SENEs). 2007. *Contact Lake Mine Site Assessment – Report on July 2006 Field Activities and Follow-Up Site Assessment*. Prepared for Indian and Northern Affairs Canada. May 2007.

SENEs Consultants Ltd. (SENEs). 2009. *Great Bear Lake Sites Proposed Long-Term, State of Environment and Construction Monitoring Plans*. Prepared for Indian and Northern Affairs Canada – Contaminants and Remediation Directorate. January 2009.

SENEs Consultants Ltd. and SRK Consulting Inc. (SENEs and SRK). 2008. *Final Remedial Action Plan, Silver Bear Mines, NT*. Prepared for Public Works and Government Services Canada. March 2008.

SENEs Consultants Ltd. (SENEs). 2011. *2010 Completion Report for Great Bear Lake Sites Phase I Remediation – Sawmill Bay, Contact Lake, El Bonanza, Bonanza, NWT*. Prepared for Indian and Northern Affairs Canada and Public Works and Government Services Canada. March 2011

SENEs Consultants Limited (SENEs). 2014. *Site-Specific Target Level for Arsenic in Surface Waters Associated with the Terra Mine Wetland*. Prepared for Public Works and Government Services of Canada. March.

SLR Consulting (Canada) Ltd. (SLR). 2017. *Water Quality Monitoring Program at the Great Bear Lake Sites*. Prepared for Indigenous and Northern Affairs Canada – Contaminants and Remediation Division. June 2017.

Sahtu Land and Water Board (SLWB) 2015. Water Licence # S15L8-001. Fort Good Hope, NT.

Sahtu Land and Water Board (SLWB) 2017. Water Licence # S17L8-002. October 2017. Fort Good Hope, NT.

Sahtu Land and Water Board (SLWB) 2017. Land Use Permit # S17D-003. May 2017. Fort Good Hope, NT.

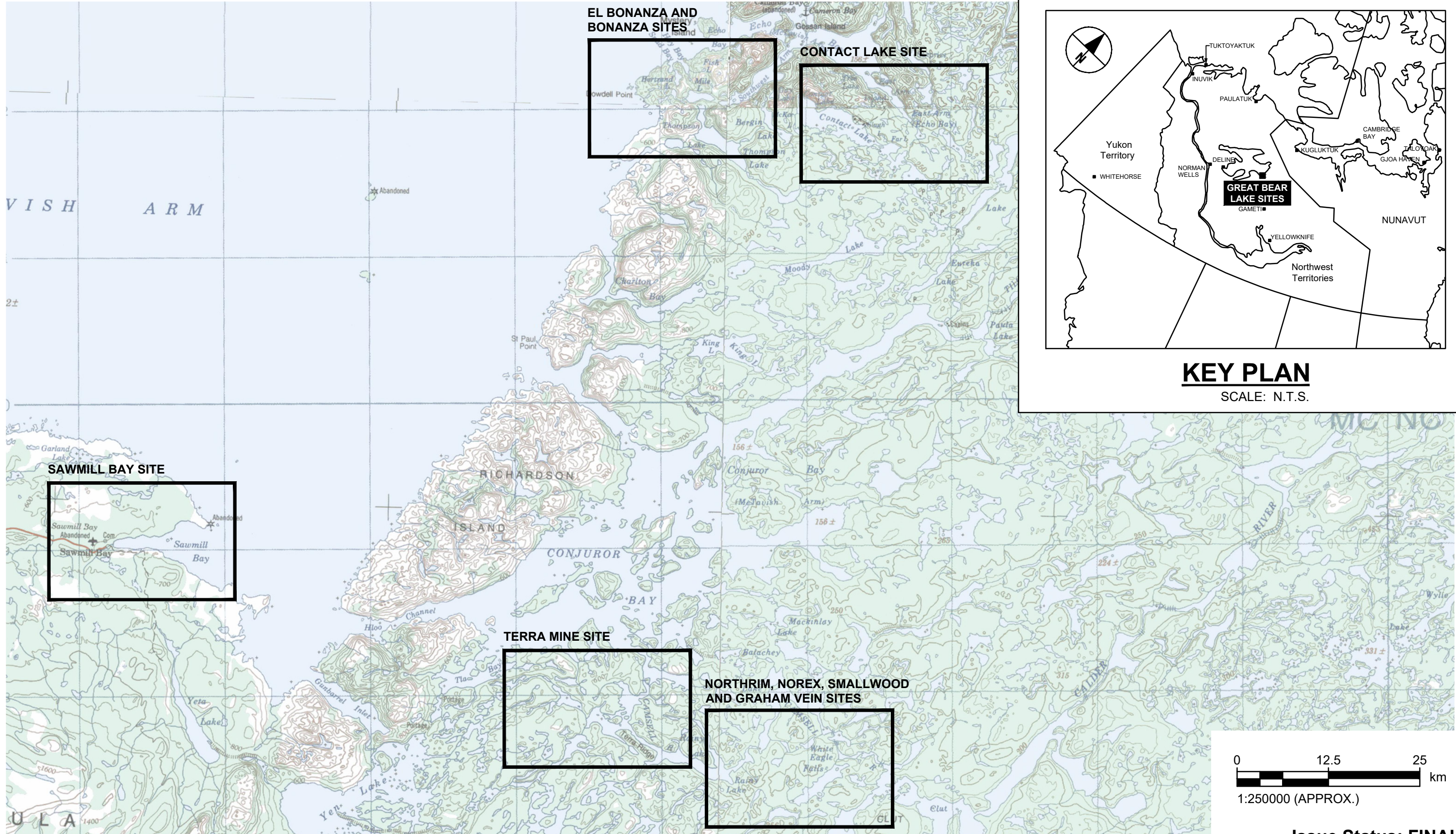
# Appendix **A**

## Monitoring Location Figures

- Figure 1 GBL Sites Location Map – Overview
- Figure 2 Silver Bear Mines Background Stations
- Figure 3 Contact Lake Background Station
- Figure 4 Terra Mine 2022 Monitoring Stations
- Figure 5 Northrim Mine 2022 Monitoring Stations
- Figure 6 Norex Mine Site Monitoring Stations
- Figure 7 Contact Lake Mine Site 2022 Monitoring Stations
- Figure 8 Smallwood Mine Site 2022 Monitoring Stations

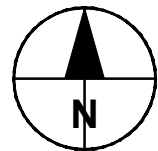


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



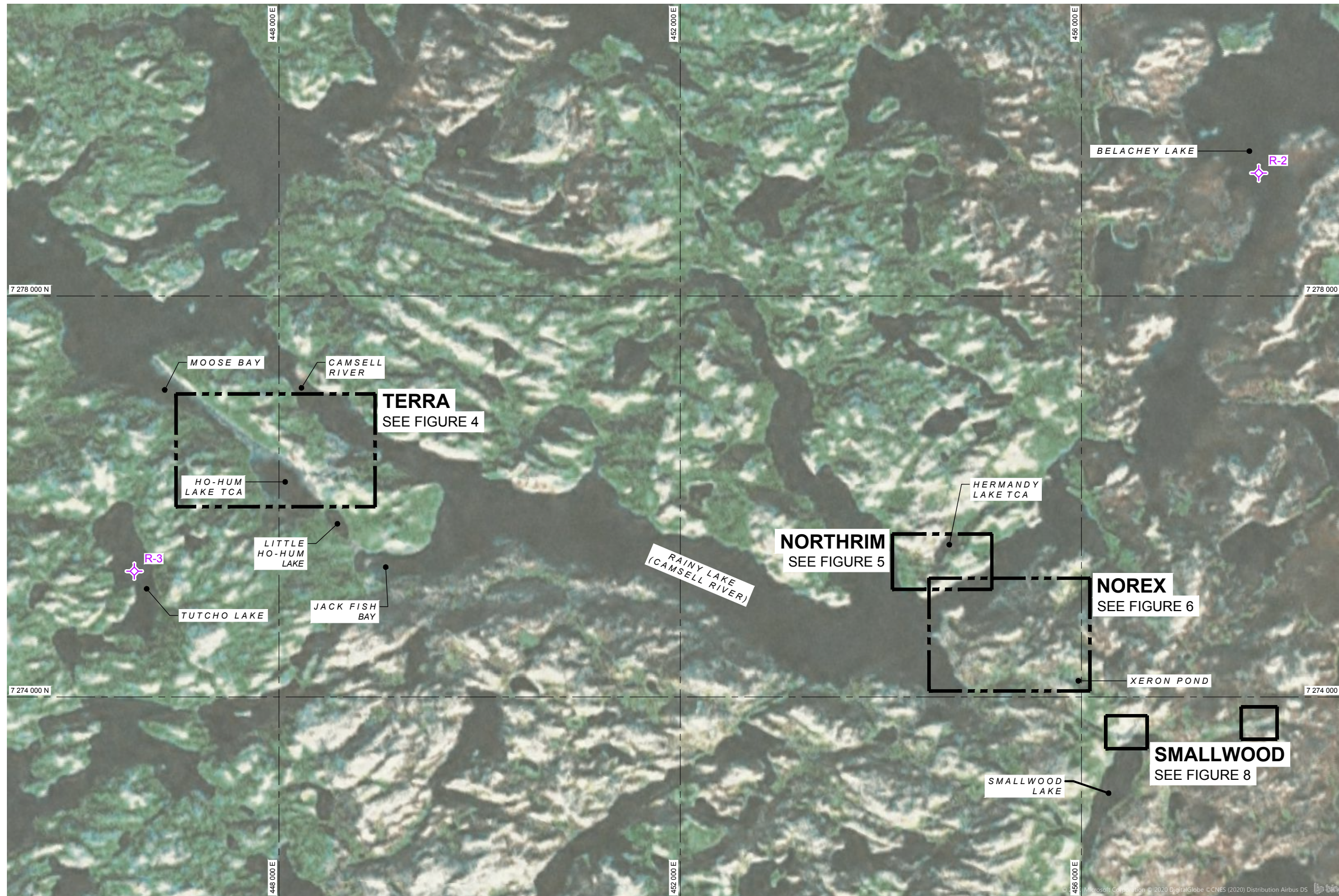
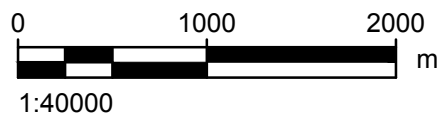


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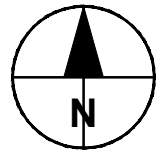
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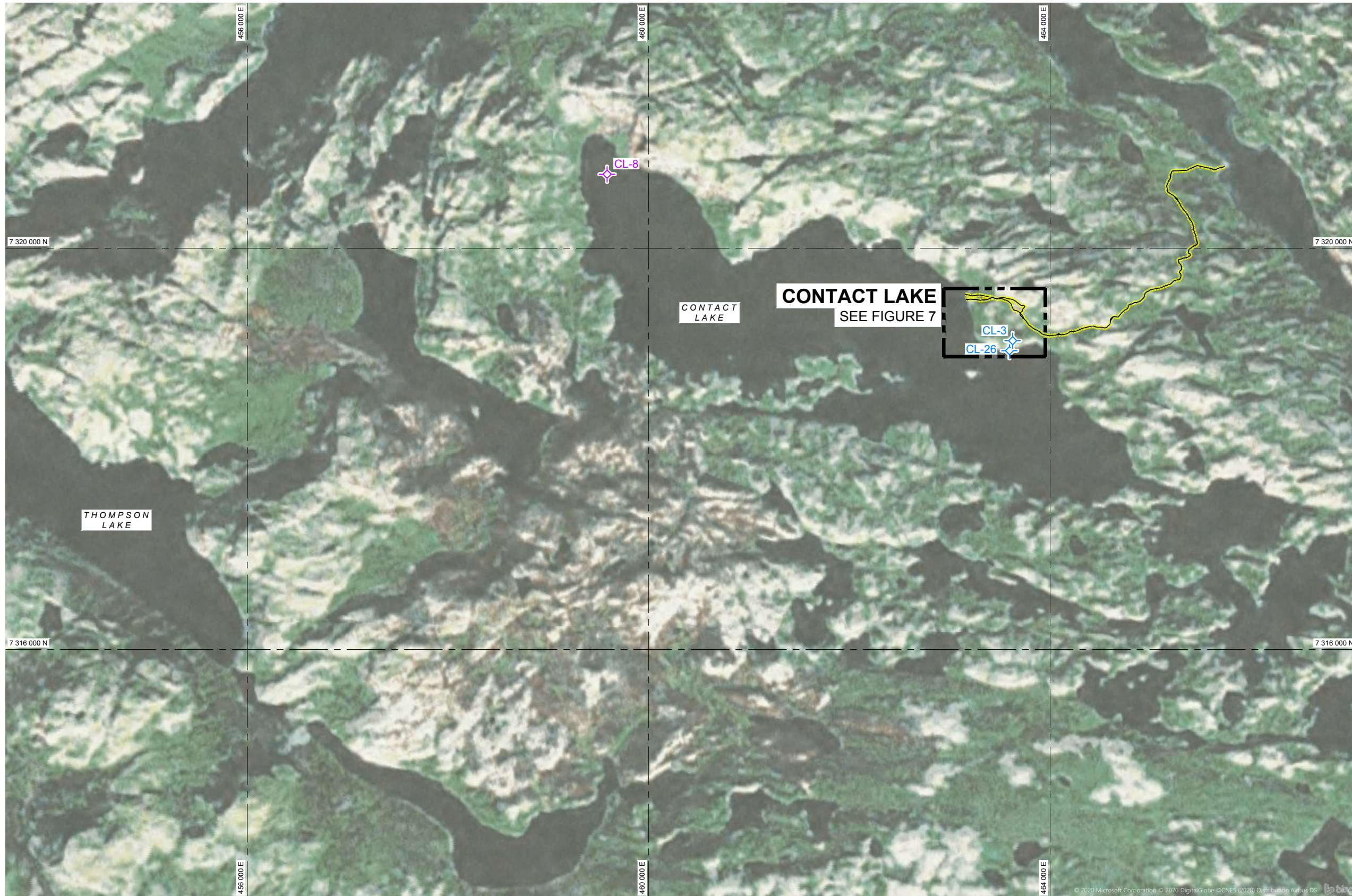
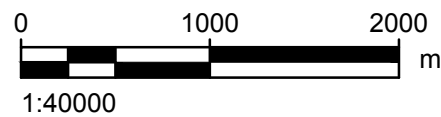


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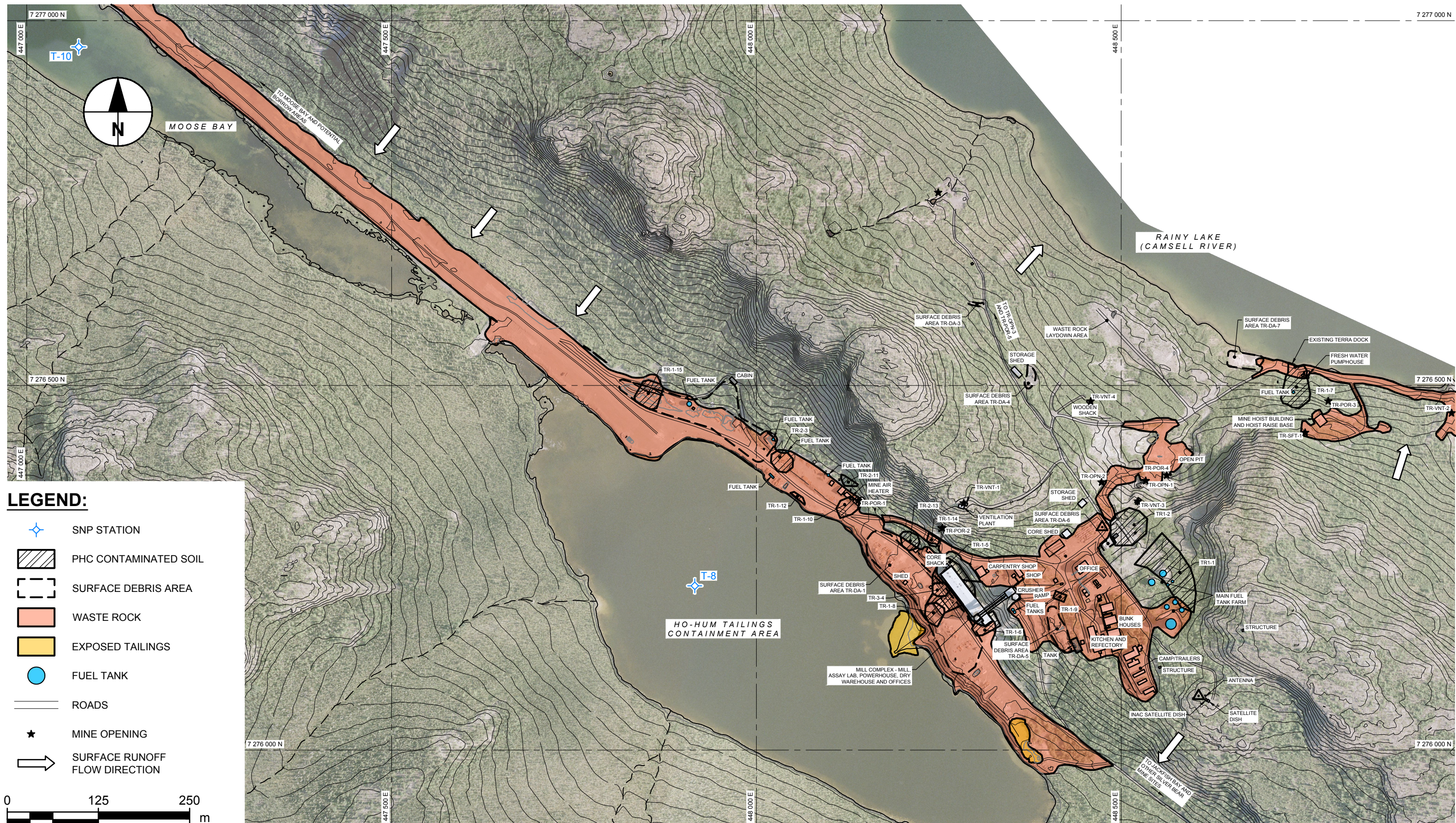
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-  FIGURE BOUNDARY
-  ROADS



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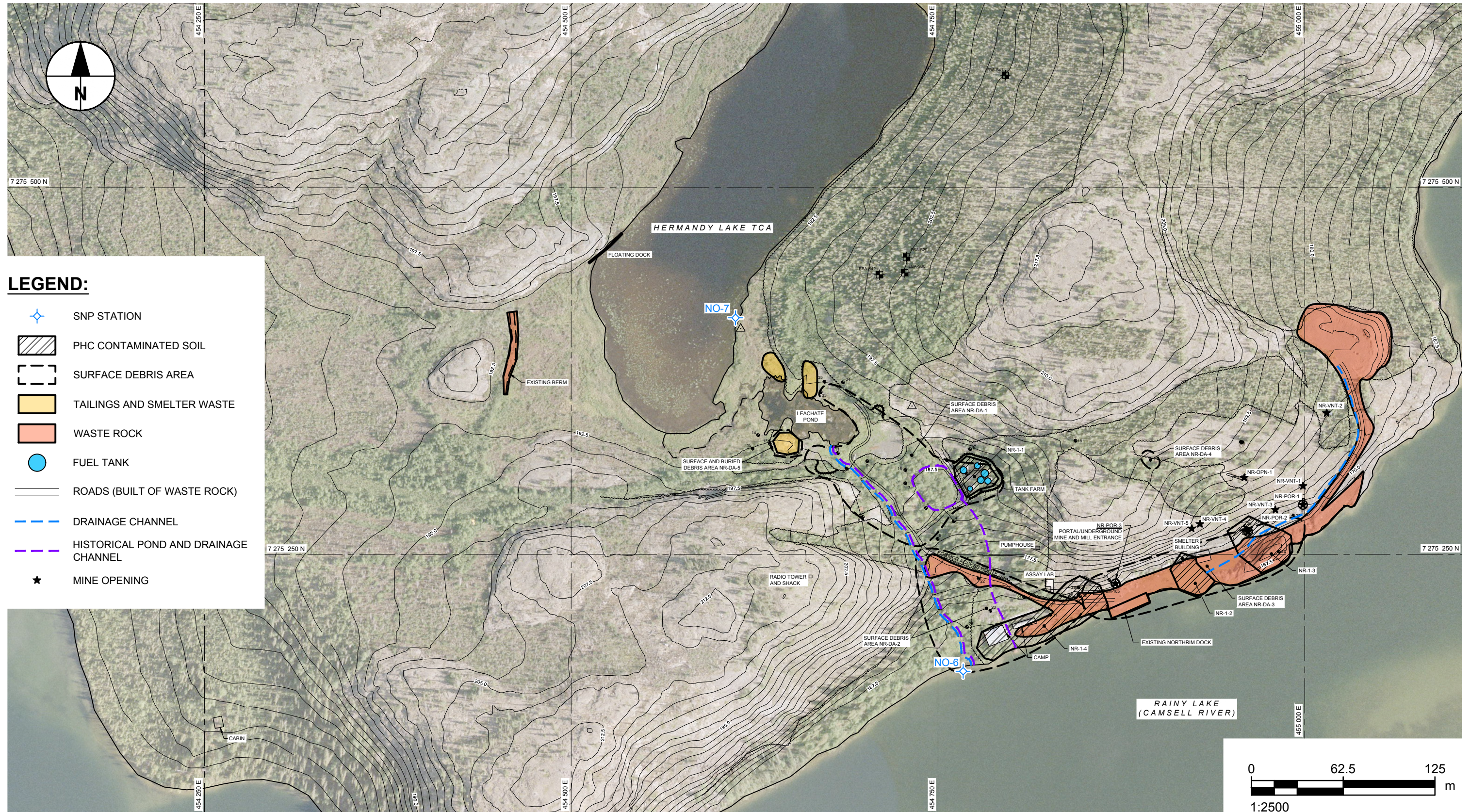
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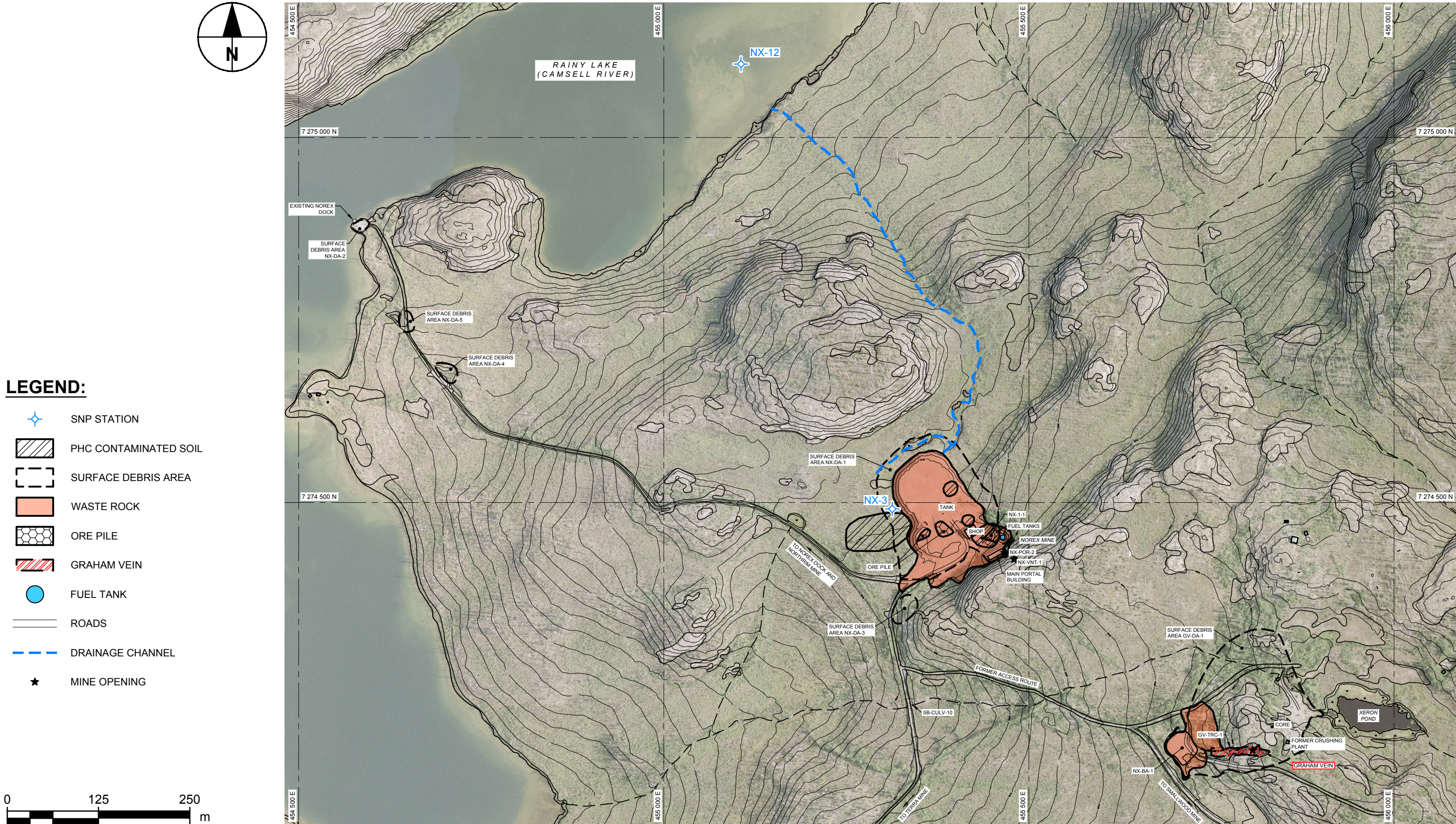
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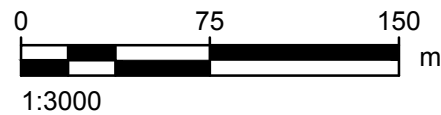
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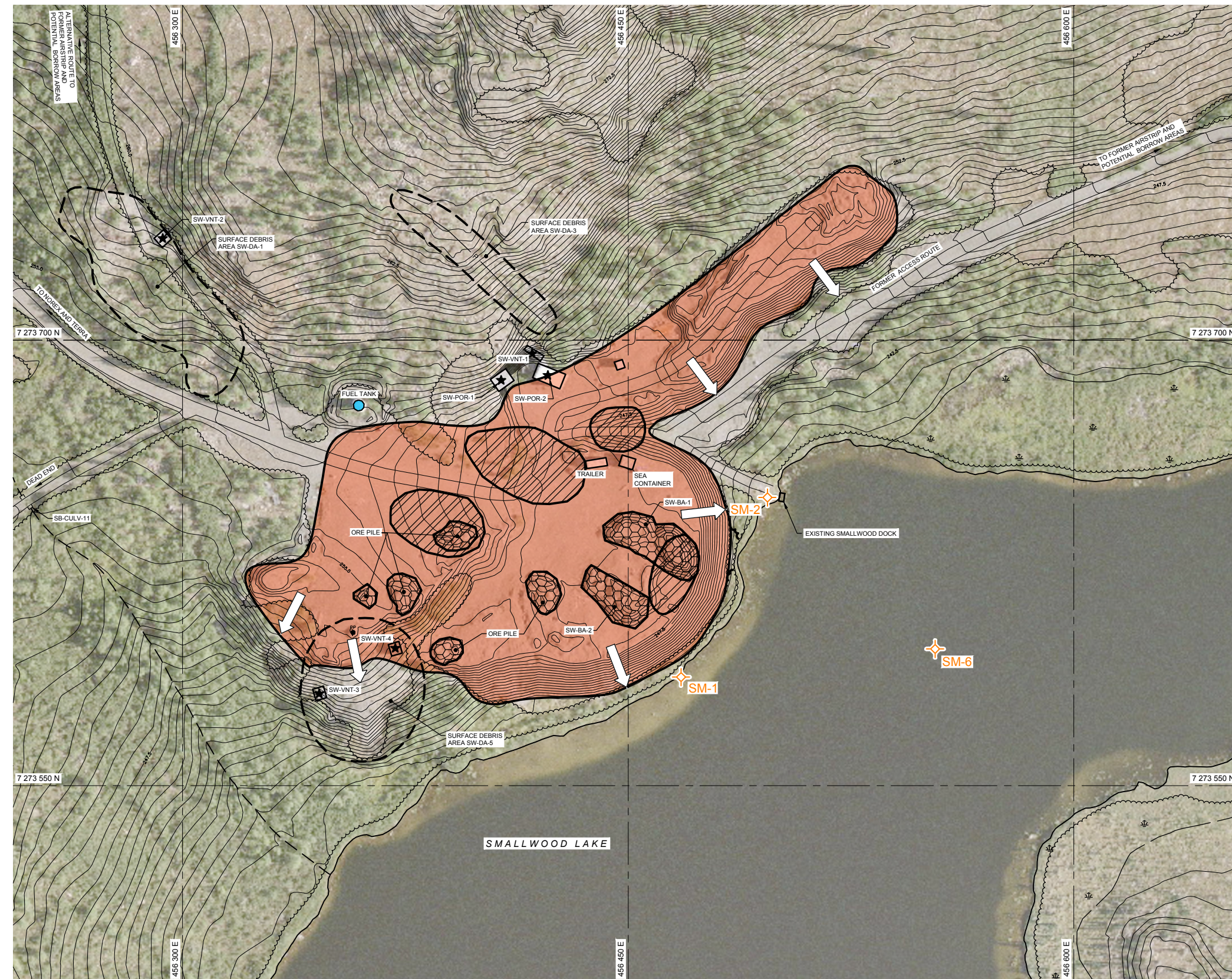
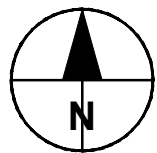




## CONTACT LAKE MINE WATER QUALITY FEATURES 2022 MONITORING STATIONS

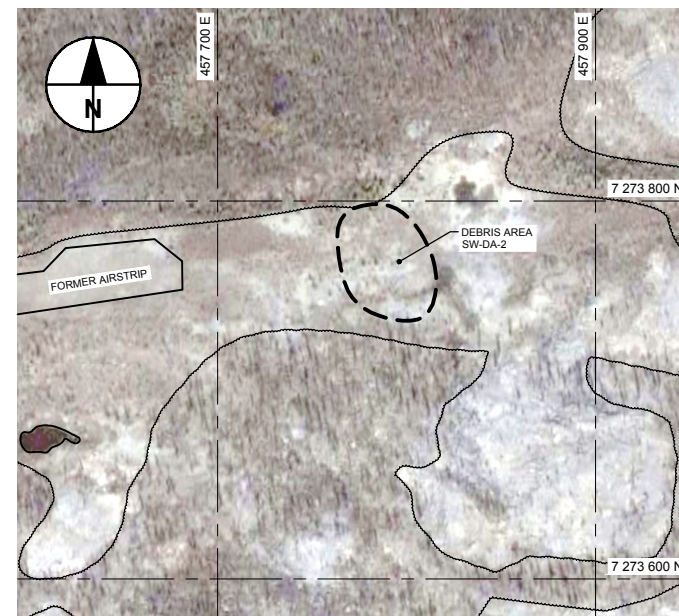


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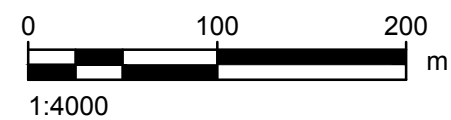


## LEGEND:

- WATER QUALITY MONITORING STATION
- PHC CONTAMINATED SOIL
- SURFACE DEBRIS AREA
- WASTE ROCK
- ORE PILE
- FUEL TANK
- ROADS
- MINE OPENING
- SURFACE RUNOFF FLOW DIRECTION



## SMALLWOOD FORMER AIRSTRIP DEBRIS AREA



Issue Status: FINAL



# Appendix **B**

## **Water Quality Analytical Results and QA/QC**

Table B-1	General Chemistry and Anions
Table B-2	Total and Dissolved Metals
Table B-3	Hydrocarbons
Table B-4	Radionuclides
Table B-5	RPD Results
Table B-6	Field and Travel Blanks

TABLE B-1: General Chemistry



Site Location						Terra Mine					Northrim Mine	
Sample Date						10-Aug-2022	10-Aug-2022	10-Aug-2022	10-Aug-2022	10-Aug-2022	8-Aug-2022	8-Aug-2022
Sample ID						T-8A	T-8A-DUP	T-8B	T-8C	T-10	NO-6	NO-7
SNP Station ID						S17L8-002 (7A)	NA	S17L8-002 (7A)	S17L8-002 (7A)	S17L8-002 (7B)	S17L8-002 (8C)	S17L8-002 (9D)
Waterbody						Ho Hum TCA	Ho Hum TCA	Ho Hum TCA	Ho Hum TCA	Moose Bay	Camsell River	Hermandy Lake
Depth						1m	1m	5m	13m	Surface	Surface	Surface
ALS Sample ID						EO2206499-001	EO2206499-005	EO2206499-002	EO2206499-003	EO2206499-004	YL2201188-002	YL2201188-001
Taiga Sample ID						221653-001	221653-005	221653-002	221653-003	221653-004	221626-002	221626-001
Parameter	Lowest Detection Limit	CCME Chronic <sup>1</sup>	CCME Acute <sup>2</sup>	SNP Effluent Quality Criteria (EQC) for T-8 and T-10	Units	Water	Water	Water	Water	Water	Water	Water
Physical Parameters												
Conductivity	1.0	NS	NS	NS	uS/cm	162	162	168	184	154	161	119
Hardness (as CaCO3)	0.50	NS	NS	NS	mg/L	80.6	76.4	83.1	89.2	81	80.6	63.8
pH	0.10	6.5 - 9	6.5-9	6.0 - 9	pH	7.9	7.9	7.74	7.7	7.98	7.97	7.87
Total Suspended Solids	3.0	NS	NS	30.0	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0	3	<3.0
Total Dissolved Solids	1	Variable <sup>3</sup>	Variable <sup>3</sup>	NS	mg/L	115	110	118	128	99	99.8	85.4
Turbidity	0.10	Variable <sup>3</sup>	Variable <sup>3</sup>	NS	NTU	0.24	0.38	0.48	0.35	0.25	1.29	0.59
Anions and Nutrients												
Alkalinity, Total (as CaCO3)	1.0	NS	NS	NS	mg/L	65.5	64.3	68.3	73	68.5	67.3	57.3
Ammonia, Total (as N)	0.0050	83.9 <sup>5</sup>	NS	10.0	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0104
Bromide (Br)	-	NS	NS	NS	mg/L	-	-	-	-	-	-	-
Chloride (Cl)	0.50	120	640	NS	mg/L	7.13	7.33	7.58	8.81	2.76	2.45	<0.50
Fluoride (F)	0.020	0.12	NS	NS	mg/L	<b>0.623</b>	<b>0.614</b>	<b>0.626</b>	<b>0.687</b>	<b>0.146</b>	<b>0.151</b>	0.12
Nitrate (as N) <sup>5</sup>	0.01	3	124	10.0	mg/L	<0.01	<0.01	<0.01	0.08	<0.01	<0.01	0.02
Nitrite (as N) <sup>5</sup>	0.01	0.06	NS	0.8	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phosphorus (P)-Total Dissolved	0.0500	NS	NS	NS	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Phosphorus (P)-Total	0.0500	NS	NS	NS	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Sulfate (SO4)	0.30	NS	NS	NS	mg/L	13.9	13.8	14	15.2	16	15.9	6.65
Sulphide as S	0.0016	NS	NS	NS	mg/L	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015
Organic Carbon												
Dissolved Organic Carbon	0.50	NS	NS	NS	mg/L	13.8	12.2	12.7	13.2	5.27	5.35	16.3
Total Organic Carbon	0.50	NS	NS	NS	mg/L	13	12.1	12.5	12.7	4.89	5.2	16.7

**Notes:**  
SNP EQC: Water Licence S17L8-002 (A) (B) Admin Amend October 2017  
CCME: Guidelines to protect freshwater aquatic life (PAL)  
<sup>1</sup> Guidelines to protect freshwater aquatic life (PAL) (long-term guidelines)  
<sup>2</sup> Guidelines to protect freshwater aquatic life (PAL) (Maximum allowable concentration [MAC] guidelines)  
<sup>3</sup> Applicable guideline dependant on background levels of the aquatic receiving water body.  
<sup>4</sup> Applicable guideline varies with pH and temperature. Assumes pH=7 and temperature=10  
<sup>5</sup> Tabulated values converted from mg/L NH3 to total ammonia as N by multiplying with 0.8224. h Applicable guideline varies with temperature and pH according to a look-up table. The maximum guideline for the site is shown.  
NS: No Standard  
-: Not available

Exceeds CCME PAL long-term

Exceeds CCME PAL MAC

Exceeds EQC

TABLE B-1: General Chemistry



Site Location						Norex Mine		Smallwood Mine			
Sample Date						8-Aug-2022	8-Aug-2022	8-Aug-2022	8-Aug-2022	8-Aug-2022	8-Aug-2022
Sample ID						NX-3	NX-12	SM-1	SM-2	SM-6A	SM-6B
SNP Station ID						S17L8-002 (10E)	S17L8-002 (11F)	NA	NA	NA	NA
Waterbody						Waste Rock Seep	Camsell River	Smallwood Lake Shoreline		Smallwood Lake	Smallwood Lake
Depth						Surface	Surface	Surface	Surface	Surface	4m
ALS Sample ID						YL2201188-004	YL2201188-003	YL2201188-013	YL2201188-014	YL2201188-015	YL2201188-016
Taiga Sample ID						221626-004	221626-003	221626-012	221626-013	221626-014	221626-015
Parameter	Lowest Detection Limit	CCME Chronic <sup>1</sup>	CCME Acute <sup>2</sup>	SNP Effluent Quality Criteria (EQC) for T-8 and T-10	Units	Water	Water	Water	Water	Water	Water
Physical Parameters											
Conductivity	1.0	NS	NS	NS	uS/cm	488.0	157	107	112	106	106
Hardness (as CaCO3)	0.50	NS	NS	NS	mg/L	275	77.4	50.3	51	51	50
pH	0.10	6.5 - 9	6.5-9	6.0 - 9	pH	7.33	8.04	7.73	7.76	7.76	7.77
Total Suspended Solids	3.0	NS	NS	30.0	mg/L	599	4	3.2	<3.0	<3.0	<3.0
Total Dissolved Solids	1	Variable <sup>3</sup>	Variable <sup>3</sup>	NS	mg/L	380	98	68.80	70.20	68.00	67.00
Turbidity	0.10	Variable <sup>3</sup>	Variable <sup>3</sup>	NS	NTU	195	0.34	1.4	0.62	0.75	0.41
Anions and Nutrients											
Alkalinity, Total (as CaCO3)	1.0	NS	NS	NS	mg/L	108.0	61.8	41.5	41.0	41.4	41.8
Ammonia, Total (as N)	0.0050	83.9 <sup>5</sup>	NS	10.0	mg/L	0.211	0.0051	0.0107	0.0079	0.0132	0.0071
Bromide (Br)	-	NS	NS	NS	mg/L	-	-	-	-	-	-
Chloride (Cl)	0.50	120	640	NS	mg/L	1.40	2.64	<0.50	<0.50	<0.50	<0.50
Fluoride (F)	0.020	0.12	NS	NS	mg/L	<b>0.413</b>	<b>0.162</b>	<b>0.261</b>	<b>0.256</b>	<b>0.258</b>	<b>0.264</b>
Nitrate (as N) <sup>5</sup>	0.01	3	124	10.0	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrite (as N) <sup>5</sup>	0.01	0.06	NS	0.8	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phosphorus (P)-Total Dissolved	0.0500	NS	NS	NS	mg/L	0.0850	<0.050	<0.050	<0.050	<0.050	<0.050
Phosphorus (P)-Total	0.0500	NS	NS	NS	mg/L	2.4900	<0.050	<0.050	<0.050	<0.050	<0.050
Sulfate (SO4)	0.30	NS	NS	NS	mg/L	155.00	16.60	13.0	13.9	12.3	12.3
Sulphide as S	0.0016	NS	NS	NS	mg/L	0.634	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015
Organic Carbon											
Dissolved Organic Carbon	0.50	NS	NS	NS	mg/L	36.80	4.63	6.80	7.14	7.35	7.12
Total Organic Carbon	0.50	NS	NS	NS	mg/L	142.00	4.51	6.96	7.15	7.26	7.31

**Notes:**  
SNP EQC: Water Licence S17L8-002 (A) (B) Admin Amend October 2017  
CCME: Guidelines to protect freshwater aquatic life (PAL)  
<sup>1</sup> Guidelines to protect freshwater aquatic life (PAL) (long-term guidelines)  
<sup>2</sup> Guidelines to protect freshwater aquatic life (PAL) (Maximum allowable concentration [MAC] guidelines)  
<sup>3</sup> Applicable guideline dependant on background levels of the aquatic receiving water body.  
<sup>4</sup> Applicable guideline varies with pH and temperature. Assumes pH=7 and temperature=10  
<sup>5</sup> Tabulated values converted from mg/L NH3 to total ammonia as N by multiplying with 0.8224. h Applicable guideline varies with temperature and  
NS: No Standard  
-: Not available

Exceeds CCME PAL long-term

Exceeds CCME PAL MAC

Exceeds EQC

TABLE B-1: General Chemistry



Site Location						Contact Lake			
Sample Date						8-Aug-2022	8-Aug-2022	8-Aug-2022	8-Aug-2022
Sample ID						CL-3	CL-3 (DUP)	CL-26	CL-8
SNP Station ID						S17L8-002 (12G)	NA	S17L8-002 (13H)	NA
Waterbody						Tailings Pond	Tailings Pond	Contact Lake	Contact Lake (Ref)
Depth						Surface	Surface	Surface	Surface
ALS Sample ID						YL2201188-005	YL2201188-010	YL2201188-006	YL2201188-009
Taiga Sample ID						221626-005	221626-010	221626-006	221626-009
Parameter	Lowest Detection Limit	CCME Chronic <sup>1</sup>	CCME Acute <sup>2</sup>	SNP Effluent Quality Criteria (EQC) for T-8 and T-10	Units	Water	Water	Water	Water
Physical Parameters									
Conductivity	1.0	NS	NS	NS	uS/cm	221	223	46	46
Hardness (as CaCO3)	0.50	NS	NS	NS	mg/L	114	117	21	21.2
pH	0.10	6.5 - 9	6.5-9	6.0 - 9	pH	8.11	8.11	7.53	7.54
Total Suspended Solids	3.0	NS	NS	30.0	mg/L	<3.0	<3.0	<3.0	<3.0
Total Dissolved Solids	1	Variable <sup>3</sup>	Variable <sup>3</sup>	NS	mg/L	146	146	28	29
Turbidity	0.10	Variable <sup>3</sup>	Variable <sup>3</sup>	NS	NTU	1	0.67	0.21	0.16
Anions and Nutrients									
Alkalinity, Total (as CaCO3)	1.0	NS	NS	NS	mg/L	117.0	119.0	23.7	24.0
Ammonia, Total (as N)	0.0050	83.9 <sup>5</sup>	NS	10.0	mg/L	0.0196	0.0177	0.01	0.02
Bromide (Br)	-	NS	NS	NS	mg/L	-	-	-	-
Chloride (Cl)	0.50	120	640	NS	mg/L	<0.50	<0.50	<0.50	<0.50
Fluoride (F)	0.020	0.12	NS	NS	mg/L	<b>0.290</b>	<b>0.288</b>	0.102	0.103
Nitrate (as N) <sup>5</sup>	0.01	3	124	10.0	mg/L	0.04	0.03	0.03	0.03
Nitrite (as N) <sup>5</sup>	0.01	0.06	NS	0.8	mg/L	<0.01	<0.01	<0.01	<0.01
Phosphorus (P)-Total Dissolved	0.0500	NS	NS	NS	mg/L	<0.050	<0.050	<0.050	<0.050
Phosphorus (P)-Total	0.0500	NS	NS	NS	mg/L	<0.050	<0.050	<0.050	<0.050
Sulfate (SO4)	0.30	NS	NS	NS	mg/L	7.22	7.21	1.15	1.12
Sulphide as S	0.0016	NS	NS	NS	mg/L	<0.0015	<0.0015	<0.0015	<0.0015
Organic Carbon									
Dissolved Organic Carbon	0.50	NS	NS	NS	mg/L	12.60	10.60	2.36	2.37
Total Organic Carbon	0.50	NS	NS	NS	mg/L	18.00	10.80	3.18	2.46

**Notes:**  
SNP EQC: Water Licence S17L8-002 (A) (B) Admin Amend October 2017  
CCME: Guidelines to protect freshwater aquatic life (PAL)  
<sup>1</sup> Guidelines to protect freshwater aquatic life (PAL) (long-term guidelines)  
<sup>2</sup> Guidelines to protect freshwater aquatic life (PAL) (Maximum allowable concentration [MAC] guidelines)  
<sup>3</sup> Applicable guideline dependant on background levels of the aquatic receiving water body.  
<sup>4</sup> Applicable guideline varies with pH and temperature. Assumes pH=7 and temperature=10  
<sup>5</sup> Tabulated values converted from mg/L NH3 to total ammonia as N by multiplying with 0.8224. h Applicable guideline varies with temperature and  
NS: No Standard  
-: Not available

Exceeds CCME PAL long-term

Exceeds CCME PAL MAC

Exceeds EQC



TABLE B-1: General Chemistry



Site Location						Background Station		Travel Blank and Field Blank		
Sample Date						8-Aug-2022	8-Aug-2022	10-Aug-2022	8-Aug-2022	8-Aug-2022
Sample ID						R-2	R-3	SB-FB	CL-FB	TB
SNP Station ID						NA	NA	NA	NA	NA
Waterbody						Belachey Lake (Ref)	Tutcho Lake (Ref)	Field Blank	Field Blank	Travel Blank
Depth						Surface	Surface	NA	NA	NA
ALS Sample ID						YL2201188-007	YL2201188-008	EO2206499-007	YL2201188-011	YL2201188-012
Taiga Sample ID						221626-007	221626-008	221653-006	221626-011	-
Parameter	Lowest Detection Limit	CCME Chronic <sup>1</sup>	CCME Acute <sup>2</sup>	SNP Effluent Quality Criteria (EQC) for T-8 and T-10	Units	Water	Water	Water	Water	Water
Physical Parameters										
Conductivity	1.0	NS	NS	NS	uS/cm	158	72.7	<2.0	1.1	1.3
Hardness (as CaCO3)	0.50	NS	NS	NS	mg/L	76.4	35.2	<0.50	<0.50	<0.50
pH	0.10	6.5 - 9	6.5-9	6.0 - 9	pH	8.03	7.7	5.44	5.67	5.59
Total Suspended Solids	3.0	NS	NS	30.0	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0
Total Dissolved Solids	1	Variable <sup>3</sup>	Variable <sup>3</sup>	NS	mg/L	97	51.4	<1.0	<1.0	<1.0
Turbidity	0.10	Variable <sup>3</sup>	Variable <sup>3</sup>	NS	NTU	0.45	0.58	0.13	<0.10	<0.10
Anions and Nutrients										
Alkalinity, Total (as CaCO3)	1.0	NS	NS	NS	mg/L	63.5	35.9	<2.0	<2.0	<2.0
Ammonia, Total (as N)	0.0050	83.9 <sup>5</sup>	NS	10.0	mg/L	0.006	0.0354	<0.0050	<0.0050	0.0113
Bromide (Br)	-	NS	NS	NS	mg/L	-	-	-	-	-
Chloride (Cl)	0.50	120	640	NS	mg/L	2.66	0.52	<0.50	<0.50	<0.50
Fluoride (F)	0.020	0.12	NS	NS	mg/L	<b>0.157</b>	<b>0.132</b>	<0.020	<0.020	<0.020
Nitrate (as N) <sup>5</sup>	0.01	3	124	10.0	mg/L	<0.01	0.02	<0.02	<0.01	<0.0050
Nitrite (as N) <sup>5</sup>	0.01	0.06	NS	0.8	mg/L	<0.01	<0.01	<0.01	<0.01	<0.0010
Phosphorus (P)-Total Dissolved	0.0500	NS	NS	NS	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
Phosphorus (P)-Total	0.0500	NS	NS	NS	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
Sulfate (SO4)	0.30	NS	NS	NS	mg/L	16.7	2.17	<0.30	<0.050	<0.050
Sulphide as S	0.0016	NS	NS	NS	mg/L	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015
Organic Carbon										
Dissolved Organic Carbon	0.50	NS	NS	NS	mg/L	4.76	8.33	0.50	<0.50	<0.50
Total Organic Carbon	0.50	NS	NS	NS	mg/L	4.99	8.63	<0.50	<0.50	<0.50

**Notes:**  
SNP EQC: Water Licence S17L8-002 (A) (B) Admin Amend October 2017  
CCME: Guidelines to protect freshwater aquatic life (PAL)  
<sup>1</sup> Guidelines to protect freshwater aquatic life (PAL) (long-term guidelines)  
<sup>2</sup> Guidelines to protect freshwater aquatic life (PAL) (Maximum allowable concentration [MAC] guidelines)  
<sup>3</sup> Applicable guideline dependant on background levels of the aquatic receiving water body.  
<sup>4</sup> Applicable guideline varies with pH and temperature. Assumes pH=7 and temperature=10  
<sup>5</sup> Tabulated values converted from mg/L NH3 to total ammonia as N by multiplying with 0.8224. h Applicable guideline varies with temperature and  
NS: No Standard  
-: Not available

Exceeds CCME PAL long-term

Exceeds CCME PAL MAC

Exceeds EQC

TABLE B-2: Total and Dissolved Metals

Site Location					Terra Mine					Northrim Mine		Norex Mine		Smallwood Mine				
Sample Date					10-Aug-2022	10-Aug-2022	10-Aug-2022	10-Aug-2022	10-Aug-2022	08-Aug-2022	08-Aug-2022	08-Aug-2022	08-Aug-2022	8-Aug-2022	8-Aug-2022	8-Aug-2022	8-Aug-2022	
Sample ID					T-8A	T-8A-DUP	T-8B	T-8C	T-10	NO-6	NO-7	NX-3	NX-12	SM-1	SM-2	SM-6A	SM-6B	
SNP Station ID					S17L8-002 (7A)	NA	S17L8-002 (7A)	S17L8-002 (7A)	S17L8-002 (7B)	S17L8-002 (8C)	S17L8-002 (9D)	S17L8-002 (10E)	S17L8-002 (11F)	NA	NA	NA	NA	
Waterbody					Ho Hum TCA	Ho Hum TCA	Camsell River	Ho Hum TCA	Moose Bay	Camsell River	Hermandy Lake	Waste Rock Seep	Camsell River	Smallwood Lake Shoreline			Smallwood Lake	Smallwood Lake
Depth					1m	1m	5m	13m	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	4m
ALS Sample ID					EO2206499-001	EO2206499-005	EO2206499-002	EO2206499-003	EO2206499-004	YL2201188-002	YL2201188-001	YL2201188-004	YL2201188-003	YL2201188-013	YL2201188-014	YL2201188-015	YL2201188-016	
Parameter	Lowest Detection Limit	CCME Chronic <sup>1</sup>	CCME Acute <sup>2</sup>	SNP Effluent Quality Criteria (EQC) for T-8 and T-10	Units	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	
Total Metals																		
Aluminum (Al)	0.0030	0.005 - 0.1 <sup>6</sup>	NS	0.8	mg/L	0.0266	0.0247	0.0215	0.0168	0.0170	0.0429	0.0203	0.731	0.0172	0.0302	0.015	0.0135	0.0141
Antimony (Sb)	0.00010	NS	NS	NS	mg/L	0.00097	0.00102	0.00098	0.00105	<0.00010	<0.00010	0.00015	0.00117	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)	0.00010	0.005	NS	1 mg/L (7A) / 0.2 mg/L (7B)	mg/L	0.0622	0.0617	0.0644	0.0737	0.00048	0.00095	0.00062	0.531	0.00024	0.00058	0.00052	0.00052	0.00051
Barium (Ba)	0.00010	NS	NS	NS	mg/L	0.0152	0.0151	0.0163	0.0179	0.0131	0.014	0.00639	0.098	0.013	0.00748	0.00694	0.00689	0.00675
Beryllium (Be)	0.000020	NS	NS	NS	mg/L	0.000044	0.000027	0.000045	0.000030	<0.000020	0.000328	<0.000020	0.000074	<0.000020	<0.000020	0.000036	<0.000020	<0.000020
Bismuth (Bi)	0.000050	NS	NS	NS	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.00276	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)	0.002	1.5	29	NS	mg/L	0.023	0.022	0.013	0.014	0.0133	0.0058	0.0076	0.0113	0.0076	0.0114	0.0118	0.0115	0.0114
Cadmium (Cd)	0.0000050	0.00013-0.0059 <sup>3</sup>	0.00004-0.0017 <sup>3</sup>	NS	mg/L	0.0000288	0.0000319	0.0000181	0.0000153	0.0000473	0.00032	0.0000068	0.00143	<0.000050	0.000118	0.000102	0.0000323	0.0000422
Calcium (Ca)	0.050	NS	NS	NS	mg/L	23.3	24.4	24.5	27.6	19.9	18.7	18.7	84.80	13.6	13.5	13.7	13.4	13.4
Cesium (Cs)	0.000010	NS	NS	NS	mg/L	0.000035	0.000033	0.000035	0.000034	<0.000010	<0.000010	<0.000010	0.000097	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium (Cr)	0.00010	0.0089 <sup>4</sup>	NS	NS	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00047	0.00016	0.00204	0.00014	0.00014	0.00011	<0.00010	0.00017
Cobalt (Co)	0.00010	NS	NS	NS	mg/L	0.00014	0.00013	0.00017	0.00020	<0.00010	0.00038	0.00013	0.0742	<0.00010	0.00032	0.00011	<0.00010	<0.00010
Copper (Cu)	0.00050	0.002-0.004 <sup>3</sup>	NS	0.02	mg/L	0.00892	0.00919	0.00975	0.00978	0.00093	0.00201	0.00248	0.03910	0.000710	0.0019	0.00175	0.00248	0.00178
Iron (Fe)	0.010	0.3	NS	NS	mg/L	0.032	0.031	0.032	0.036	0.020	0.043	0.007	11.70	0.02	0.048	0.017	0.015	0.015
Lead (Pb)	0.000050	0.0019-0.007 <sup>3</sup>	NS	0.02	mg/L	0.000290	0.000545	0.000191	0.000138	0.000126	0.000476	0.000274	0.135	<0.000050	0.000165	0.000075	<0.000050	<0.000050
Lithium (Li)	0.0010	NS	NS	NS	mg/L	0.0065	0.0062	0.0070	0.0077	0.0028	0.003	0.0011	0.007	0.0012	0.0012	0.001	<0.0010	0.0011
Magnesium (Mg)	0.01	NS	NS	NS	mg/L	4.43	4.50	4.64	4.88	8.00	7.7	4.16	15.3	4.04	4.07	4.14	4.02	4.02
Manganese (Mn)	0.00010	Variable <sup>5</sup>	NS	NS	mg/L	0.00419	0.00428	0.00739	0.0213	0.00217	0.00387	0.00533	1.48	0.0011	0.0272	0.00981	0.00805	0.00806
Mercury (Hg)	0.0000050	0.000026	NS	NS	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000078	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)	0.000050	0.073	NS	NS	mg/L	0.00210	0.00208	0.00207	0.00214	0.000276	0.000298	0.000564	0.0184	0.000304	0.001	0.000963	0.000994	0.000999
Nickel (Ni)	0.00050	0.025-0.15 <sup>3</sup>	NS	0.1	mg/L	0.00392	0.00388	0.00408	0.00423	<0.00050	0.001	0.0007	0.019	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P)	0.050	NS	NS	NS	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	2.5	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium (K)	0.050	NS	NS	NS	mg/L	1.84	1.84	1.90	2.04	1.14	0.65	5.7	1.1	0.696	<0.050	0.703	0.688	0.688
Rubidium (Rb)	0.00020	NS	NS	NS	mg/L	0.00476	0.00480	0.00484	0.00513	0.00150	0.002	0.00155	0.004	0.0014	0.00179	0.0015	0.00162	0.00158
Selenium (Se)	0.000050	0.001	NS	NS	mg/L	0.000063	0.000062	0.000066	0.000078	<0.000050	0.000419	0.000057	0.00064	<0.000050	0.00007	0.000083	0.000067	0.000058
Silicon (Si)	0.10	NS	NS	NS	mg/L	1.14	1.11	1.30	1.69	0.92	1.10	0.5	9.99	0.90	0.65	0.66	0.64	0.66
Silver (Ag)	0.000010	0.00025	NS	0.004	mg/L	0.000012	0.000016	0.000018	0.000013	<0.000010	<0.000010	<0.000010	0.0000638	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)	0.050	NS	NS	NS	mg/L	5.88	5.90	6.17	6.75	2.98	2.9	1.38	10.2	2.8	2.51	2.5	2.59	2.59
Strontium (Sr)	0.00020	NS	NS	NS	mg/L	0.0650	0.0638	0.0703	0.0758	0.0681	0.1	0.0232	0.2	0.1	0.0258	0.0258	0.0258	0.0256
Sulfur (S)	0.50	NS	NS	NS	mg/L	5.19	4.95	5.25	5.58	5.96	5.7	2.67	59.4	5.5	4.45	4.58	4.28	4.37
Tellurium (Te)	0.00020	NS	NS	NS	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)	0.000010	0.0008	NS	NS	mg/L	0.000026	<0.000010	0.000028	0.000012	<0.000010	0.000311	<0.000010	0.000029	<0.000010	0.000021	0.000028	<0.000010	0.000021
Thorium (Th)	0.00010	NS	NS	NS	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00012	0.00024	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)	0.00010	NS	NS	NS	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)	0.00030	NS	NS	NS	mg/L	0.00087	0.00092	0.00043	<0.00030	0.00090	0.00175	<0.00030	0.0189	0.00071	0.00086	0.00032	0.00033	<0.00030
Tungsten (W)	0.00010	NS	NS	NS	mg/L	0.00015	0.00016	0.00018	0.00017	<0.00010	<0.00010	<0.00010	0.00065	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)	0.000010	0.015	0.033	NS	mg/L	0.00018	0.00197	0.00191	0.00224	0.000584	0.000983	0.000141	0.00549	0.000349	0.000308	0.000284	0.000296	0.000296
Vanadium (V)	0.00050	NS	NS	<0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00088	0.00061	0.00693	<0.00050	0.00052	<0.00050	&lt	



TABLE B-3: Hydrocarbons



Site Location						Terra Mine					Northrim Mine		Norex Mine	
Sample Date						10-Aug-2022	10-Aug-2022	10-Aug-2022	10-Aug-2022	10-Aug-2022	08-Aug-2022	08-Aug-2022	08-Aug-2022	08-Aug-2022
Sample ID						T-8A	T-8A-DUP	T-8B	T-8C	T-10	NO-6	NO-7	NX-3	NX-12
SNP Station ID						S17L8-002 (7A)	NA	S17L8-002 (7A)	S17L8-002 (7A)	S17L8-002 (7B)	S17L8-002 (8C)	S17L8-002 (9D)	S17L8-002 (10E)	S17L8-002 (11F)
Waterbody						Ho Hum TCA	Ho Hum TCA	Ho Hum TCA	Ho Hum TCA	Moose Bay	Camsell River	Hermandy Lake	Waste Rock Seep	Camsell River
Depth						1m	1m	5m	13m	Surface	Surface	Surface	Surface	Surface
ALS Sample ID						EO2206499-001	EO2206499-005	EO2206499-002	EO2206499-003	EO2206499-004	YL2201188-002	YL2201188-001	YL2201188-004	YL2201188-003
Parameter	Lowest Detection Limit	CCME Chronic <sup>1</sup>	CCME Acute <sup>2</sup>	SNP Effluent Quality Criteria (EQC) for T-8 and T-10	Units	Water	Water	Water	Water	Water	Water	Water	Water	Water
Aggregate Organics														
Oil and Grease	5.0	NS	NS	5.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	-	-	-	-
Oil And Grease (Visible Sheen)	-	NS	NS	no	-	-	-	-	-	-	-	-	-	-
Volatile Organic Compounds														
Benzene	0.00050	0.37	NS	NS	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Ethylbenzene	0.00050	0.09	NS	NS	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Toluene	0.00050	0.002	0.002	NS	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
ortho-Xylene	0.00030	NS	NS	NS	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00030	<0.00030	<0.00030	<0.00030
meta- & para-Xylene	0.00040	NS	NS	NS	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040	<0.00040	<0.00040	<0.00040
Xylenes	0.00050	NS	NS	NS	mg/L	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075	<0.00050	<0.00050	<0.00050	<0.00050
F1 (C6-C10)	0.10	NS	NS	NS	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Hydrocarbons														
F1-BTEX	0.025	NS	NS	NS	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (C10-C16)	0.10	NS	NS	NS	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F3 (C16-C34)	0.25	NS	NS	NS	mg/L	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250
F4 (C34-C50)	0.25	NS	NS	NS	mg/L	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250

Notes:

SNP EQC: Water Licence S17L8-002 (A) (B) Admin Amend October 2017

CCME: Guidelines to protect freshwater aquatic life (PAL)

<sup>1</sup> Guidelines to protect freshwater aquatic life (PAL) (long-term guidelines)

<sup>2</sup> Guidelines to protect freshwater aquatic life (PAL) (Maximum allowable concentration [MAC] guidelines)

Exceeds CCME PAL long-term

Exceeds CCME PAL MAC

Exceeds EQC

TABLE B-3: Hydrocarbons



Site Location						Smallwood Mine				Contact Lake			Travel Blank and Field Blank		
Sample Date						08-Aug-2022	08-Aug-2022	08-Aug-2022	08-Aug-2022	08-Aug-2022	08-Aug-2022	08-Aug-2022	10-Aug-2022	8-Aug-2022	8-Aug-2022
Sample ID						SM-1	SM-2	SM-6A	SM-6B	CL-3	CL-3 (DUP)	CL-26	SB-FB	CL-FB	TB
SNP Station ID						NA	NA	NA	NA	S17L8-002 (12G)	NA	S17L8-002 (13H)	NA	NA	NA
Waterbody						Smallwood Lake Shoreline		Smallwood Lake	Smallwood Lake	Tailings Pond	Tailings Pond	Contact Lake	Field Blank	Field Blank	Travel Blank
Depth						Surface	Surface	Surface	4m	Surface	Surface	Surface	NA	NA	NA
ALS Sample ID						YL2201188-013	YL2201188-014	YL2201188-015	YL2201188-016	YL2201188-005	YL2201188-010	YL2201188-006	EO2206499-006	YL2201188-011	YL2201188-012
Parameter	Lowest Detection Limit	CCME Chronic <sup>1</sup>	CCME Acute <sup>2</sup>	SNP Effluent Quality Criteria (EQC) for T-8 and T-10	Units	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Aggregate Organics															
Oil and Grease	5.0	NS	NS	5.0	mg/L	-	-	-	-	-	-	-	<1.0	-	<5.0
Oil And Grease (Visible Sheen)	-	NS	NS	no	-	-	-	-	-	-	-	-	-	-	-
Volatile Organic Compounds															
Benzene	0.00050	0.37	NS	NS	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.50	<0.00050
Ethylbenzene	0.00050	0.09	NS	NS	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.50	<0.00050
Toluene	0.00050	0.002	0.002	NS	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.50	<0.00050
ortho-Xylene	0.00030	NS	NS	NS	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.40	<0.00030
meta- & para-Xylene	0.00040	NS	NS	NS	mg/L	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.30	<0.00040
Xylenes	0.00050	NS	NS	NS	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00075	<0.50	<0.00050
F1 (C6-C10)	0.10	NS	NS	NS	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<0.10
Hydrocarbons															
F1-BTEX	0.025	NS	NS	NS	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<100	<0.10
F2 (C10-C16)	0.10	NS	NS	NS	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<100	<0.10
F3 (C16-C34)	0.25	NS	NS	NS	mg/L	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<250	<0.250
F4 (C34-C50)	0.25	NS	NS	NS	mg/L	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<250	<0.250

Notes:

SNP EQC: Water Licence S17L8-002 (A) (B) Admin Amend October 2017

CCME: Guidelines to protect freshwater aquatic life (PAL)

<sup>1</sup> Guidelines to protect freshwater aquatic life (PAL) (long-term guidelines)

<sup>2</sup> Guidelines to protect freshwater aquatic life (PAL) (Maximum allowable concentration [MAC] guidelines)

Exceeds CCME PAL long-term

Exceeds CCME PAL MAC

Exceeds EQC

TABLE B-4: Radionuclides



Site Location				Contact Lake				Field Blank
Sample Date				8-Aug-2022	8-Aug-2022	8-Aug-2022	8-Aug-2022	8-Aug-2022
Sample ID				CL-3	CL-3 (DUP)	CL-26	CL-8	CL-FB
SNP Station ID				S17L8-002 (12G)	NA	S17L8-002 (13H)	NA	NA
Waterbody				Tailings Pond	Tailings Pond	Contact Lake	Contact Lake (Ref)	Travel Blank
Depth				Surface	Surface	Surface	Surface	NA
ALS Sample ID				YL2201188-005	YL2201188-010	YL2201188-006	YL2201188-009	YL2201188-011
Radionuclides	Lowest Detection Limit <sup>1</sup>	Canadian Drinking Water Quality Guidelines <sup>2</sup>	Units	Water	Water	Water	Water	Water
Lead-210	0.02	0.2	Bq/L	0.04	0.07	0.02	<0.02	<0.02
Radium-226	0.005	0.5	Bq/L	0.08	0.09	<0.005	<0.3	<0.3

**Notes:**  
<sup>1</sup> Laboratory adjusted reporting limit based on sample concetration and matrix. Full laboratory reports in Appendix E.  
<sup>2</sup> CCME guidelines not developed.  
Canadian Drinking Water Guidelines (CDWG) for Radiological Parameters were applied  
Above Detection Limit  
Exceeds CDWG



TABLE B-5: QA/QC



Sample Location				Terra Mine		Scenario	Calculation	Acceptability
Sample Date				10-Aug-2022	10-Aug-2022			
Sample ID				T-8A	T-8A-DUP			
ALS Sample ID				S17L8-002 (7A)	NA			
Parameter	Lowest Detection Limit	5X DL	Units	Ho Hum TCA	Ho Hum TCA			
Physical Parameters								
Conductivity	2.0	10.0	uS/cm	162	162	D	0%	Acceptable
Hardness (as CaCO3)	0.50	2.50	mg/L	80.6	76.4	D	5.4%	Acceptable
pH	0.10	0.50	pH	7.90	7.90	D	0%	Acceptable
Total Suspended Solids	3.0	15.0	mg/L	<3.0	<3.0	A	N/A	Acceptable
Total Dissolved Solids	10	50	mg/L	115	110	D	4%	Acceptable
Turbidity	0.10	0.50	NTU	0.24	0.38	C	[Result B – Result A] < 2x RDL	Accetable
Anions and Nutrients								
Alkalinity, Total (as CaCO3)	1.0	5.0	mg/L	65.5	64.3	D	2%	Acceptable
Ammonia, Total (as N)	0.0050	0.0250	mg/L	<0.0050	<0.0050	A	N/A	Acceptable
Bromide (Br)	0.050	0.250	mg/L	-	-	N/A	N/A	Acceptable
Chloride (Cl)	0.50	2.50	mg/L	7.13	7.33	D	3%	Acceptable
Fluoride (F)	0.020	0.100	mg/L	0.623	0.614	D	1%	Acceptable
Nitrate (as N)	0.0100	0.0500	mg/L	<0.010	<0.010	A	N/A	Acceptable
Nitrite (as N)	0.0100	0.0500	mg/L	<0.010	<0.010	A	N/A	Acceptable
Phosphorus (P)-Total Dissolved	0.0020	0.0100	mg/L	<0.050	<0.050	A	N/A	Acceptable
Phosphorus (P)-Total	0.0020	0.0100	mg/L	<0.050	<0.050	A	N/A	Acceptable
Sulfate (SO4)	0.30	1.50	mg/L	13.9	13.8	D	1%	Acceptable
Sulphide as S	0.018	0.090	mg/L	<0.0015	<0.0015	A	N/A	Acceptable
Organic / Inorganic Carbon								
Dissolved Organic Carbon	0.50	2.50	mg/L	13.8	12.2	D	12%	Acceptable
Total Organic Carbon	0.50	2.50	mg/L	13.0	12.1	D	7%	Acceptable
Total Metals								
Aluminum (Al)	0.0030	0.0150	mg/L	0.0266	0.0247	D	7%	Acceptable
Antimony (Sb)	0.00010	0.00050	mg/L	0.00097	0.00102	D	5%	Acceptable
Arsenic (As)	0.00010	0.00050	mg/L	0.0622	0.0617	D	1%	Acceptable
Barium (Ba)	0.00010	0.00050	mg/L	0.0152	0.0151	D	1%	Acceptable
Beryllium (Be)	0.000020	0.000100	mg/L	0.000044	0.000027	C	[Result B – Result A] < 2x RDL	Unacceptable
Bismuth (Bi)	0.000050	0.000250	mg/L	<0.000050	<0.000050	A	N/A	Acceptable
Boron (B)	0.010	0.050	mg/L	0.023	0.022	C	[Result B – Result A] < 2x RDL	Acceptable
Cadmium (Cd)	0.0000050	0.0000250	mg/L	0.0000288	0.0000319	D	10%	Acceptable
Calcium (Ca)	0.050	0.250	mg/L	23.3	24.4	D	5%	Acceptable
Cesium (Cs)	0.000010	0.000050	mg/L	0.000035	0.000033	C	6%	Acceptable
Chromium (Cr)	0.00050	0.00250	mg/L	<0.00050	<0.00050	A	N/A	Acceptable
Cobalt (Co)	0.00010	0.00050	mg/L	0.00014	0.00013	C	7%	Acceptable
Copper (Cu)	0.00050	0.00250	mg/L	0.00892	0.00919	D	3%	Acceptable
Iron (Fe)	0.010	0.050	mg/L	0.032	0.031	C	3%	Acceptable
Lead (Pb)	0.000050	0.000250	mg/L	0.000290	0.000545	D	61%	Unacceptable
Lithium (Li)	0.0010	0.0050	mg/L	0.0065	0.0062	D	5%	Acceptable
Magnesium (Mg)	0.0050	0.03	mg/L	4.43	4.50	D	2%	Acceptable
Manganese (Mn)	0.00010	0.00050	mg/L	0.00419	0.00428	D	2%	Acceptable
Mercury (Hg)	0.0000050	0.0000250	mg/L	<0.0000050	<0.0000050	A	N/A	Acceptable
Molybdenum (Mo)	0.000050	0.000250	mg/L	0.00210	0.00208	D	1%	Acceptable
Nickel (Ni)	0.00050	0.00250	mg/L	0.00392	0.00388	D	1%	Acceptable
Phosphorus (P)	0.050	0.250	mg/L	<0.050	<0.050	A	N/A	Acceptable
Potassium (K)	0.050	0.25	mg/L	1.84	1.84	D	0%	Acceptable
Selenium (Se)	0.000050	0.000250	mg/L	0.000063	0.000062	C	2%	Acceptable
Silicon (Si)	0.10	0.50	mg/L	1.14	1.11	D	3%	Acceptable
Silver (Ag)	0.000010	0.000050	mg/L	0.000012	0.000016	C	29%	Acceptable
Sodium (Na)	0.050	0.250	mg/L	5.88	5.90	D	0%	Acceptable
Strontium (Sr)	0.00020	0.00100	mg/L	0.0650	0.0638	D	2%	Acceptable
Sulfur (S)	0.50	2.50	mg/L	5.19	4.95	D	5%	Acceptable
Tellurium (Te)	0.00020	0.0010	mg/L	<0.00020	<0.00020	A	N/A	Acceptable
Thallium (Tl)	0.000010	0.000050	mg/L	0.000026	<0.000010	B	Result B – (0.5x RDL) <RDL	Unacceptable
Thorium (Th)	0.00010	0.000500	mg/L	<0.00010	<0.00010	A	N/A	Acceptable
Tin (Sn)	0.00010	0.00050	mg/L	<0.00010	<0.00010	A	N/A	Acceptable
Titanium (Ti)	0.00030	0.00150	mg/L	0.00087	0.00092	C	[Result B – Result A] < 2x RDL	Acceptable
Tungsten (W)	0.00010	0.00050	mg/L	0.00015	0.00016	C	[Result B – Result A] < 2x RDL	Acceptable
Uranium (U)	0.000010	0.000050	mg/L	0.00188	0.00197	D	5%	Acceptable
Vanadium (V)	0.00050	0.00250	mg/L	<0.00050	<0.00050	A	N/A	Acceptable
Zinc (Zn)	0.0030	0.0150	mg/L	0.0052	0.0099	C	[Result B – Result A] < 2x RDL	Acceptable
Zirconium (Zr)	0.00020	0.00100	mg/L	<0.00020	<0.00020	A	N/A	Acceptable
Dissolved Metals								
Aluminum (Al)	0.0010	0.0050	mg/L	0.0098	0.0101	D	3%	Acceptable
Antimony (Sb)	0.00010	0.00050	mg/L	0.00108	0.00110	D	2%	Acceptable
Arsenic (As)	0.00010	0.00050	mg/L	0.0574	0.0565	D	2%	Acceptable
Barium (Ba)	0.00010	0.00050	mg/L	0.0141	0.0148	D	5%	Acceptable
Beryllium (Be)	0.000020	0.000100	mg/L	0.000024	<0.000020	B	Result B – (0.5x RDL) <RDL	Acceptable
Bismuth (Bi)	0.000050	0.000250	mg/L	<0.000050	<0.000050	A	N/A	Acceptable
Boron (B)	0.010	0.050	mg/L	0.024	0.022	C	[Result B – Result A] < 2x RDL	Acceptable
Cadmium (Cd)	0.0000050	0.0000250	mg/L	0.0000126	0.0000135	C	[Result B – Result A] < 2x RDL	Acceptable
Calcium (Ca)	0.050	0.250	mg/L	24.5	22.7	D	8%	Acceptable
Cesium (Cs)	0.000010	0.000050	mg/L	0.000034	0.000033	C	[Result B – Result A] < 2x RDL	Acceptable
Chromium (Cr)	0.00050	0.00250	mg/L	<0.00050	<0.00050	A	N/A	Acceptable
Cobalt (Co)	0.00010	0.00050	mg/L	<0.00010	<0.00010	A	N/A	Acceptable
Copper (Cu)	0.00020	0.00100	mg/L	0.00835	0.00825	D	1%	Acceptable
Iron (Fe)	0.030	0.150	mg/L	<0.030	<0.030	A	N/A	Acceptable
Lead (Pb)	0.000050	0.000250	mg/L	<0.000050	<0.000050	A	N/A	Acceptable
Lithium (Li)	0.0010	0.0050	mg/L	0.0074	0.0060	D	21%	Acceptable
Magnesium (Mg)	0.0050	0.03	mg/L	4.72	4.80	D	2%	Acceptable
Manganese (Mn)	0.00500	0.02500	mg/L	<0.00500	<0.00500	A	N/A	Acceptable
Mercury (Hg)	0.0000050	0.0000250	mg/L	<0.0000050	<0.0000050	A	N/A	Acceptable
Molybdenum (Mo)	0.000050	0.000250	mg/L	0.00207	0.00219	D	6%	Acceptable
Nickel (Ni)	0.00050	0.00250	mg/L	0.00371	0.00367	D	1%	Acceptable
Phosphorus (P)	0.050	0.250	mg/L	<0.050	<0.050	A	N/A	Acceptable
Potassium (K)	0.050	0.25	mg/L	1.99	1.87	D	6%	Acceptable
Selenium (Se)	0.000050	0.000250	mg/L	<0.000050	<0.000050	A	N/A	Acceptable
Silicon (Si)	0.050	0.250	mg/L	1.06	1.02	D	4%	Acceptable
Silver (Ag)	0.000010	0.000050	mg/L	<0.000010	<0.000010	A	N/A	Acceptable
Sodium (Na)	0.050	0.250	mg/L	6.00	5.81	D	3%	Acceptable
Strontium (Sr)	0.00020	0.00100	mg/L	0.0669	0.0661	D	1%	Acceptable
Sulfur (S)	0.50	2.50	mg/L	5.21	4.85	D	7%	Acceptable
Tellurium (Te)	0.00020	0.0010	mg/L	<0.00020	<0.00020	A	N/A	Acceptable
Thallium (Tl)	0.000010	0.000050	mg/L	<0.000010	<0.000010	A	N/A	Acceptable
Thorium (Th)	0.00010	0.000500	mg/L	<0.00010	<0.00010	A	N/A	Acceptable
Tin (Sn)	0.00010	0.00050	mg/L	<0.00010	<0.00010	A	N/A	Acceptable
Titanium (Ti)	0.00030	0.00150	mg/L	<0.00030	<0.00030	A	N/A	Acceptable
Tungsten (W)	0.00010	0.00050	mg/L	0.00019	0.00018	C	[Result B – Result A] < 2x RDL	Acceptable
Uranium (U)	0.000010	0.000050	mg/L	0.00204	0.00205	D	0%	Acceptable
Vanadium (V)	0.00050	0.00250	mg/L	<0.00050	<0.00050	A	N/A	Acceptable
Zinc (Zn)	0.0010	0.0050	mg/L	0.0024	0.0026	C	[Result B – Result A] < 2x RDL	Acceptable
Zirconium (Zr)	0.00020	0.00100	mg/L	<0.00020	0.00025	B	Result B – (0.5x RDL) <RDL	Acceptable
Aggregate Organics								
Oil and Grease	5.0	25.0	mg/L	<1.0	<1.0	A	N/A	Acceptable
Oil And Grease (Visible Sheen)	-	-	-	-	-	N/A	N/A	N/A
Volatile Organic Compounds								
Benzene	0.00050	0.00250	mg/L	<0.00050	<0.00050	A	N/A	Acceptable
Ethylbenzene	0.00050	0.00250	mg/L	<0.00050	<0.00050	A	N/A	Acceptable
Toluene	0.00050	0.00250	mg/L	<0.00050	<0.00050	A	N/A	Acceptable
ortho-Xylene	0.00030	0.00150	mg/L	<0.00050	<0.00050	A	N/A	Acceptable
meta- & para-Xylene	0.00040	0.00200	mg/L	<0.00050	<0.00050	A	N/A	Acceptable
Xylenes	0.00050	0.00250	mg/L	<0.00075	<0.00075	A	N/A	Acceptable
F1 (C6-C10)	0.10	0.50	mg/L	<0.10	<0.10	A	N/A	Acceptable
Hydrocarbons								
F1-BTEX	0.025	0.13	mg/L	<0.10	<0.10	A	N/A	Acceptable
F2 (C10-C16)	0.10	0.50	mg/L	<0.10	<0.10	A	N/A	Acceptable
F3 (C16-C34)	0.25	1.25	mg/L	<0.250	<0.250	A	N/A	Acceptable
F4 (C34-C50)	0.25	1.25	mg/L	<0.250	<0.250	A	N/A	Acceptable

TABLE B-5: QA/QC



Sample Location				Contact Lake		Scenario	Calculation	Acceptability
Sample Date				08-Aug-2022	08-Aug-2022			
Sample ID				CL-3	CL-3 (DUP)			
ALS Sample ID				S17L8-002 (12G)	NA			
Parameter	Lowest Detection Limit	5X DL	Units	Tailings Pond	Tailings Pond			
Physical Parameters								
Conductivity	2.0	10.0	uS/cm	221.0	223.0	D	1%	Acceptable
Hardness (as CaCO3)	0.50	2.50	mg/L	114	117	D	3%	Acceptable
pH	0.10	0.50	pH	8.11	8.11	D	0%	Acceptable
Total Suspended Solids	3.0	15.0	mg/L	<3.0	<3.0	A	N/A	Acceptable
Total Dissolved Solids	10	50	mg/L	146	146	D	0%	Acceptable
Turbidity	0.10	0.50	NTU	1	0.67	D	40%	Unacceptable
Anions and Nutrients								
Alkalinity, Total (as CaCO3)	1.0	5.0	mg/L	117.0	119.0	D	2%	Acceptable
Ammonia, Total (as N)	0.0050	0.0250	mg/L	0.0196	0.0177	C	Result B – Result A  < 2x RDL	Acceptable
Bromide (Br)	0.050	0.250	mg/L	-	-	N/A	N/A	Acceptable
Chloride (Cl)	0.50	2.50	mg/L	<0.50	<0.50	A	N/A	Acceptable
Fluoride (F)	0.020	0.100	mg/L	0.290	0.288	D	1%	Acceptable
Nitrate (as N)	0.0100	0.0500	mg/L	0.04	0.03	C	29%	Acceptable
Nitrite (as N)	0.0100	0.0500	mg/L	<0.010	<0.010	A	N/A	Acceptable
Phosphorus (P)-Total Dissolved	0.0020	0.0100	mg/L	<0.050	<0.050	A	N/A	Acceptable
Phosphorus (P)-Total	0.0020	0.0100	mg/L	<0.050	<0.050	A	N/A	Acceptable
Sulfate (SO4)	0.30	1.50	mg/L	7.22	7.21	D	0%	Acceptable
Sulphide as S	0.018	0.090	mg/L	<0.0015	<0.0015	A	N/A	Acceptable
Organic / Inorganic Carbon								
Dissolved Organic Carbon	0.50	2.50	mg/L	12.60	10.60	D	17%	Acceptable
Total Organic Carbon	0.50	2.50	mg/L	18.00	10.80	D	50%	Unacceptable
Total Metals								
Aluminum (Al)	0.0030	0.0150	mg/L	0.0083	0.0052	C	Result B – Result A  < 2x RDL	Acceptable
Antimony (Sb)	0.00010	0.00050	mg/L	0.00055	0.00061	D	10%	Acceptable
Arsenic (As)	0.00010	0.00050	mg/L	0.0118	0.0124	D	5%	Acceptable
Barium (Ba)	0.00010	0.00050	mg/L	0.0294	0.0297	D	1%	Acceptable
Beryllium (Be)	0.000020	0.000100	mg/L	0.000031	0.00007	C	Result B – Result A  < 2x RDL	Acceptable
Bismuth (Bi)	0.000050	0.000250	mg/L	0.000082	<0.000050	B	Result B – (0.5x RDL) <RDL	Unacceptable
Boron (B)	0.010	0.050	mg/L	0.0331	0.0368	C	Result B – Result A  < 2x RDL	Acceptable
Cadmium (Cd)	0.0000050	0.0000250	mg/L	0.0000221	0.0000645	C	Result B – Result A  < 2x RDL	Unacceptable
Calcium (Ca)	0.050	0.250	mg/L	29.3	29.4	D	0%	Acceptable
Cesium (Cs)	0.000010	0.000050	mg/L	0.000019	0.000014	C	Result B – Result A  < 2x RDL	Acceptable
Chromium (Cr)	0.00050	0.00250	mg/L	0.00014	0.00019	C	Result B – Result A  < 2x RDL	Acceptable
Cobalt (Co)	0.00010	0.00050	mg/L	0.00017	0.0002	C	Result B – Result A  < 2x RDL	Acceptable
Copper (Cu)	0.00050	0.00250	mg/L	0.00952	0.00996	D	5%	Acceptable
Iron (Fe)	0.010	0.050	mg/L	0.078	0.066	D	17%	Acceptable
Lead (Pb)	0.000050	0.000250	mg/L	0.000098	0.000068	C	Result B – Result A  < 2x RDL	Acceptable
Lithium (Li)	0.0010	0.0050	mg/L	0.0026	0.003	C	Result B – Result A  < 2x RDL	Acceptable
Magnesium (Mg)	0.0050	0.03	mg/L	9.87	10.6	D	7%	Acceptable
Manganese (Mn)	0.00010	0.00050	mg/L	0.0545	0.06	D	10%	Acceptable
Mercury (Hg)	0.0000050	0.0000250	mg/L	<0.0000050	0.0000056	B	N/A	Acceptable
Molybdenum (Mo)	0.000050	0.000250	mg/L	0.000386	0.000386	D	0%	Acceptable
Nickel (Ni)	0.00050	0.00250	mg/L	0.00115	0.00125	C	Result B – Result A  < 2x RDL	Acceptable
Phosphorus (P)	0.050	0.250	mg/L	<0.050	<0.050	A	N/A	Acceptable
Potassium (K)	0.050	0.25	mg/L	1.3	1.41	D	8%	Acceptable
Selenium (Se)	0.000050	0.000250	mg/L	<0.000050	0.000102	B	N/A	Acceptable
Silicon (Si)	0.10	0.50	mg/L	2.93	2.96	D	1%	Acceptable
Silver (Ag)	0.000010	0.000050	mg/L	0.000168	0.000073	D	79%	Unacceptable
Sodium (Na)	0.050	0.250	mg/L	4.33	4.57	D	5%	Acceptable
Strontium (Sr)	0.00020	0.00100	mg/L	0.0761	0.0748	D	2%	Acceptable
Sulfur (S)	0.50	2.50	mg/L	2.63	2.63	D	0%	Acceptable
Tellurium (Te)	0.00020	0.0010	mg/L	<0.00020	<0.00020	A	N/A	Acceptable
Thallium (Tl)	0.000010	0.000050	mg/L	0.000022	0.000062	C	Result B – Result A  < 2x RDL	Unacceptable
Thorium (Th)	0.00010	0.000500	mg/L	<0.00010	<0.00010	A	N/A	Acceptable
Tin (Sn)	0.00010	0.00050	mg/L	<0.00010	<0.00010	A	N/A	Acceptable
Titanium (Ti)	0.00030	0.00150	mg/L	<0.00030	<0.00030	A	N/A	Acceptable
Tungsten (W)	0.00010	0.00050	mg/L	<0.00010	<0.00010	A	N/A	Acceptable
Uranium (U)	0.000010	0.000050	mg/L	0.045	0.0467	D	4%	Acceptable
Vanadium (V)	0.00050	0.00250	mg/L	<0.00050	<0.00050	A	N/A	Acceptable
Zinc (Zn)	0.0030	0.0150	mg/L	<0.0030	<0.0030	A	N/A	Acceptable
Zirconium (Zr)	0.00020	0.00100	mg/L	<0.00020	<0.00020	A	N/A	Acceptable
Dissolved Metals								
Aluminum (Al)	0.0010	0.0050	mg/L	<0.0010	<0.0010	A	N/A	Acceptable
Antimony (Sb)	0.00010	0.00050	mg/L	0.001	0.00057	D	0%	Acceptable
Arsenic (As)	0.00010	0.00050	mg/L	0.012	0.012	D	0%	Acceptable
Barium (Ba)	0.00010	0.00050	mg/L	0.029	0.028	D	4%	Acceptable
Beryllium (Be)	0.000020	0.000100	mg/L	<0.000020	<0.000020	A	N/A	Acceptable
Bismuth (Bi)	0.000050	0.000250	mg/L	<0.000050	<0.000050	A	N/A	Acceptable
Boron (B)	0.010	0.050	mg/L	0.033	0.034	C	Result B – Result A  < 2x RDL	Acceptable
Cadmium (Cd)	0.0000050	0.0000250	mg/L	<0.0000050	<0.0000050	A	N/A	Acceptable
Calcium (Ca)	0.050	0.250	mg/L	30.0	29.9	D	0%	Acceptable
Cesium (Cs)	0.000010	0.000050	mg/L	0.000013	0.000014	C	Result B – Result A  < 2x RDL	Acceptable
Chromium (Cr)	0.00050	0.00250	mg/L	<0.00010	<0.00010	A	N/A	Acceptable
Cobalt (Co)	0.00010	0.00050	mg/L	<0.00010	<0.00010	A	N/A	Acceptable
Copper (Cu)	0.00020	0.00100	mg/L	0.008	0.008	D	0%	Acceptable
Iron (Fe)	0.030	0.150	mg/L	0.018	0.016	C	Result B – Result A  < 2x RDL	Acceptable
Lead (Pb)	0.000050	0.000250	mg/L	<0.000050	<0.000050	A	N/A	Acceptable
Lithium (Li)	0.0010	0.0050	mg/L	0.0028	0.0026	C	Result B – Result A  < 2x RDL	Acceptable
Magnesium (Mg)	0.0050	0.03	mg/L	11.4	11.7	D	3%	Acceptable
Manganese (Mn)	0.00500	0.02500	mg/L	0.010	0.010	D	1%	Acceptable
Mercury (Hg)	0.0000050	0.0000250	mg/L	<0.0000050	<0.0000050	A	N/A	Acceptable
Molybdenum (Mo)	0.000050	0.000250	mg/L	0.00040	0.00048	D	20%	Acceptable
Nickel (Ni)	0.00050	0.00250	mg/L	0.00106	0.00111	C	Result B – Result A  < 2x RDL	Acceptable
Phosphorus (P)	0.050	0.250	mg/L	<0.050	<0.050	A	N/A	Acceptable
Potassium (K)	0.050	0.25	mg/L	1.5	1.5	D	2%	Acceptable
Selenium (Se)	0.000050	0.000250	mg/L	<0.000050	<0.000050	A	N/A	Acceptable
Silicon (Si)	0.050	0.250	mg/L	3.1	3.1	D	1%	Acceptable
Silver (Ag)	0.000010	0.000050	mg/L	0.000023	0.000022	C	Result B – Result A  < 2x RDL	Acceptable
Sodium (Na)	0.050	0.250	mg/L	4.7	4.7	D	0%	Acceptable
Strontium (Sr)	0.00020	0.00100	mg/L	0.1	0.1	D	2%	Acceptable
Sulfur (S)	0.50	2.50	mg/L	2.7	2.6	D	0%	Acceptable
Tellurium (Te)	0.00020	0.0010	mg/L	<0.00020	<0.00020	A	N/A	Acceptable
Thallium (Tl)	0.000010	0.000050	mg/L	<0.000010	<0.000010	A	N/A	Acceptable
Thorium (Th)	0.00010	0.000500	mg/L	<0.00010	<0.00010	A	N/A	Acceptable
Tin (Sn)	0.00010	0.00050	mg/L	<0.00010	<0.00010	A	N/A	Acceptable
Titanium (Ti)	0.00030	0.00150	mg/L	<0.00030	<0.00030	A	N/A	Acceptable
Tungsten (W)	0.00010	0.00050	mg/L	<0.00010	<0.00010	A	N/A	Acceptable
Uranium (U)	0.000010	0.000050	mg/L	0.0395	0.0382	D	3%	Acceptable
Vanadium (V)	0.00050	0.00250	mg/L	<0.00050	<0.00050	A	N/A	Acceptable
Zinc (Zn)	0.0010	0.0050	mg/L	<0.0010	<0.0010	A	N/A	Acceptable
Zirconium (Zr)	0.00020	0.00100	mg/L	<0.00030	<0.00030	A	N/A	Acceptable
Aggregate Organics								
Oil and Grease	5.0	25.0	mg/L	-	-	N/A	N/A	N/A
Oil And Grease (Visible Sheen)	-	-	-	-	-	N/A	N/A	N/A
Volatile Organic Compounds								
Benzene	0.00050	0.00250	mg/L	<0.00050	<0.00050	A	N/A	Acceptable
Ethylbenzene	0.00050	0.00250	mg/L	<0.00050	<0.00050	A	N/A	Acceptable
Toluene	0.00050	0.00250	mg/L	<0.00050	<0.00050	A	N/A	Acceptable
ortho-Xylene	0.00030	0.00150	mg/L	<0.00030	<0.00030	A	N/A	Acceptable
meta- & para-Xylene	0.00040	0.00200	mg/L	<0.00043	<0.00044	A	N/A	Acceptable
Xylenes	0.00050	0.00250	mg/L	<0.00050	<0.00050	A	N/A	Acceptable
F1 (C6-C10)	0.10	0.50	mg/L	<0.10	<0.10	A	N/A	Acceptable
Hydrocarbons								
F1-BTEX	0.025	0.13	mg/L	<0.10	<0.10	A	N/A	Acceptable
F2 (C10-C16)	0.10	0.50	mg/L	<0.10	<0.10	A	N/A	Acceptable
F3 (C16-C34)	0.25	1.25	mg/L	<0.250	<0.250	A	N/A	Acceptable
F4 (C34-C50)	0.25	1.25	mg/L	<0.250	<0.250	A	N/A	Acceptable

TABLE B-6: Field and Travel Blanks



Sample Location							Travel Blank and Field Blank				
Sample Date							10-Aug-2022	10-Aug-2022	8-Aug-2022	8-Aug-2022	8-Aug-2022
Sample ID							SB-FB	SB-FB(DUP)	CL-FB	CL-FB(DUP)	TB
ALS Sample ID							EO2206499-007		YL2201188-011	YL2201188-017	YL2201188-012
Parameter	Lowest Detection Limit	Limit of Qualification	CCME Chronic <sup>1</sup>	CCME Acute <sup>2</sup>	SNP Effluent Quality Criteria (EQC) for T-8 and T-10	Units	Water	Water	Water	Water	Water
Physical Parameters											
Conductivity	1.0	5.0	NS	NS	NS	uS/cm	<2.0	-	1.1	-	1.3
Hardness (as CaCO3)	0.50	2.5	NS	NS	NS	mg/L	<0.50	-	<0.50	-	<0.50
pH	0.10	0.5	6.5 - 9	6.5-9	6.0 - 9	pH	5.44	-	5.67	-	5.59
Total Suspended Solids	3.0	15.0	NS	Variable <sup>3</sup>	30.0	mg/L	<3.0	-	<3.0	-	<3.0
Total Dissolved Solids	1.0	5.0	NS	NS	NS	mg/L	<1.0	-	<1.0	-	<1.0
Turbidity	0.10	0.5	Variable <sup>3</sup>	Variable <sup>3</sup>	NS	NTU	0.13	-	<0.10	-	<0.10
Anions and Nutrients											
Alkalinity, Total (as CaCO3)	2.0	10.0	NS	NS	NS	mg/L	<2.0	-	<2.0	-	<2.0
Ammonia, Total (as N)	0.0050	0.03	8.48 <sup>4</sup>	NS	10.0	mg/L	<0.0050	-	<0.0050	-	0.0113
Bromide (Br)	0.050	0.3	NS	NS	NS	mg/L	-	-	-	-	-
Chloride (Cl)	0.50	2.5	120	640	NS	mg/L	<0.50	-	<0.50	-	<0.50
Fluoride (F)	0.020	0.1	NS	0.120	NS	mg/L	<0.020	-	<0.020	-	<0.020
Nitrate (as N)	0.01	0.1	13	550	10.0	mg/L	<0.02	-	<0.01	-	<0.0050
Nitrite (as N)	0.01	0.1	0.06	NS	0.8	mg/L	<0.01	-	<0.01	-	<0.0010
Phosphorus (P)-Total	0.050	0.3	NS	NS	NS	mg/L	<0.050	-	<0.050	-	<0.050
Dissolved											
Phosphorus (P)-Total	0.050	0.3	NS	NS	NS	mg/L	<0.050	-	<0.050	-	<0.050
Sulfate (SO4)	0.050	0.3	NS	NS	NS	mg/L	<0.30	-	<0.050	-	<0.050
Sulphide as S	0.0015	0.01	NS	NS	NS	mg/L	<0.0015	-	<0.0015	-	<0.0015
Organic / Inorganic Carbon											
Dissolved Organic Carbon	0.50	2.50	NS	NS	NS	mg/L	0.50	-	<0.50	-	<0.50
Total Organic Carbon	0.50	2.50	NS	NS	NS	mg/L	<0.50	-	<0.50	-	<0.50
Total Metals											
Aluminum (Al)	0.0030	0.0150	0.005 - 0.1 <sup>8</sup>	NS	0.8	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Antimony (Sb)	0.00010	0.0005	NS	NS	NS	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)	0.00010	0.0005	0.005	NS	1 mg/L (7A) / 0.2 mg/L (7B)	mg/L	0.00016	<0.00010	<0.00010	<0.00010	<0.00010
Barium (Ba)	0.00010	0.0005	NS	NS	NS	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Beryllium (Be)	0.000020	0.0001	NS	NS	NS	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth (Bi)	0.000050	0.0003	NS	NS	NS	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)	0.002	0.0100	1.5	29	NS	mg/L	<0.010	<0.010	<0.0020	<0.0020	<0.0020
Cadmium (Cd)	0.0000050	0.000025	0.00013-0.0059 <sup>3</sup>	0.00004-0.0017 <sup>3</sup>	NS	mg/L	0.0000156	0.0000216	<0.0000050	0.0000147	<0.0000050
Calcium (Ca)	0.050	0.25	NS	NS	NS	mg/L	0.058	<0.050	<0.050	<0.050	<0.050
Cesium (Cs)	0.000010	0.0001	NS	NS	NS	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium (Cr)	0.00010	0.0005	0.0089 <sup>4</sup>	NS	NS	mg/L	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010
Cobalt (Co)	0.00010	0.0005	NS	NS	NS	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)	0.00050	0.0025	0.002-0.004 <sup>3</sup>	NS	0.02	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron (Fe)	0.010	0.0500	0.3	NS	NS	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Lead (Pb)	0.000050	0.0003	0.0019-0.007 <sup>3</sup>	NS	0.02	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)	0.0010	0.0050	NS	NS	NS	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)	0.0050	0.0250	NS	NS	NS	mg/L	0.0073	<0.0050	<0.0050	<0.0050	<0.0050
Manganese (Mn)	0.00010	0.0005	Variable <sup>5</sup>	NS	NS	mg/L	0.00041	<0.00010	<0.00010	<0.00010	<0.00010
Mercury (Hg)	0.0000050	0.0000	0.000026	NS	NS	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)	0.000050	0.0003	0.073	NS	NS	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Nickel (Ni)	0.00050	0.0025	0.025-0.15 <sup>8</sup>	NS	0.1	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P)	0.050	0.2500	NS	NS	NS	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium (K)	0.050	0.2500	NS	NS	NS	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
Rubidium (Rb)	0.00020	0.0010	NS	NS	NS	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Selenium (Se)	0.000050	0.0003	0.001	NS	NS	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon (Si)	0.10	0.5000	NS	NS	NS	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Silver (Ag)	0.000010	0.0001	0.000025	NS	0.004	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)	0.050	0.2500	NS	NS	NS	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
Strontium (Sr)	0.00020	0.0010	NS	NS	NS	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Sulfur (S)	0.50	2.5000	NS	NS	NS	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Tellurium (Te)	0.00020	0.0010	NS	NS	NS	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)	0.000010	0.0001	0.0008	NS	NS	mg/L	0.000026	0.000020	<0.000010	0.000015	<0.000010
Thorium (Th)	0.00010	0.0005	NS	NS	NS	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)	0.00010	0.0005	NS	NS	NS	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)	0.00030	0.0015	NS	NS	NS	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten (W)	0.00010	0.0005	NS	NS	NS	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)	0.000010	0.0001	0.015	0.033	NS		0.000014	0.000018	<0.000010	0.000014	<0.000010
Vanadium (V)	0.00050	0.0025	NS	NS	NS		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)	0.0030	0.0150	NS	NS	0.04		0.0060	0.0173	<0.0030	<0.0030	<0.0030
Zirconium (Zr)	0.00020	0.0010	NS	NS	NS		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals											
Aluminum (Al)	0.0010	0.0050	NS	NS	NS	mg/L	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010
Antimony (Sb)	0.00010	0.0005	NS	NS	NS	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)	0.00010	0.0005	NS	NS	NS	mg/L	0.00016	<0.00010	<0.00010	<0.00010	<0.00010
Barium (Ba)	0.00010	0.0005	NS	NS	NS	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Beryllium (Be)	0.000020	0.0001	NS	NS	NS	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth (Bi)	0.000050	0.0003	NS	NS	NS	mg/L	<0.000050	0.0000071	<0.000050	<0.000050	<0.000050
Boron (B)	0.002	0.0100	NS	NS	NS	mg/L	<0.010	<0.010	<0.0020	<0.0020	<0.0020
Cadmium (Cd)	0.0000050	0.0000	NS	NS	NS	mg/L	0.0000156	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)	0.050	0.2500	NS	NS	NS	mg/L	0.058	<0.050	<0.050	<0.050	<0.050
Cesium (Cs)	0.000010	0.0001	NS	NS	NS	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium (Cr)	0.00010	0.0005	NS	NS	NS	mg/L	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010
Cobalt (Co)	0.00010	0.0005	NS	NS	NS	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)	0.00020	0.0010	NS	NS	NS	mg/L	<0.00050	<0.00020	<0.00020	<0.00020	<0.00020
Iron (Fe)	0.010	0.0500	NS	NS	NS	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Lead (Pb)	0.000										

# Appendix **C**

## Water Quality Monitoring Field Notes



SITE	Terra Mine			Silver Bear Reference		Northrim Mine		Norex Mine		
STATION	T-8			T-10	R-2	R-3	NO-6	NO-7	NX-3	NX-12
Lodestar Sample ID	GBL-2022-00001-001	GBL-2022-00001-002	GBL-2022-00001-003	GBL-2022-00001-004	GBL-2022-00001-011	GBL-2022-00001-012	GBL-2022-00001-006	GBL-2022-00001-005	GBL-2022-00001-008	GBL-2022-00001-007
Date	10-Aug-22			10-Aug-22	8-Aug-22	8-Aug-22	8-Aug-22	8-Aug-22	8-Aug-22	8-Aug-22
Personnel	Rebecca H., Chris Y., Tyrone Y.			Rebecca H., Chris Y., Tyrone Y.	Rebecca H., Adriana S., Tyrone Y.	Rebecca H., Adriana S., Tyrone Y.	Chris A., Wayne G.	Chris A., Wayne G.	Rebecca H., Adriana S., Tyrone Y.	Rebecca H., Adriana S., Tyrone Y.
Location Description	Ho Hum TCA - Mid lake			Moose Bay, halfway down airstrip	Reference Station, Belachey Lake, upstream	Reference Station, Tutcho Lake, mid lake	Entry point of current drainage to Hermandy Lake	Hermandy Lake, southeast end	Marshland area, beyond toe of wasterock	Camsell River, at drainage from Norex
Latitude (Dec. Deg. N)	65.60387			65.61036	65.63223	65.59494	65.59551	65.59757	65.5895	65.59488
Longitude (Dec. Deg. W)	118.13012			118.14873	117.91731	118.15921	117.98116	117.98439	117.96833	117.97376
Sample Type	Open Water			Open Water	Open Water	Open Water	Shoreline	Shoreline	On-land	Open Water
Access	Boat			Boat	Float Plane	Float Plane	Foot	Foot	Foot	Boat
Method	Van Dorn			Grab	Grab	Grab	Grab - Pole	Grab - Pole	Grab - Syringe	Grab - Pole
Sample Depth	1m	5m	11m	1m	Surface	Surface	Surface	Surface	0.10m	Surface
Parameters	G, TM, DM, PHC, O&G			G, TM, DM, PHC, O&G	G, TM	G, TM, DM	G, TM, DM, PHC	G, TM, DM, PHC	G, TM, DM, PHC	G, TM, DM, PHC
Temperature (°C)	15.42	13.78	5.89	16.1	18.1	18.7	18.6	20.7	13.9	18.2
pH	7.65	7.32	6.77	7.5	7.99	7.59	7.9	8.31	7.13	8.3
Conductivity (µS/cm)	175	180	198	165.0	162.0	74.0	173.0	71.0	488.0	161.0
Dissolved Oxygen (%)	105.8	97	69.6	105.5	115.1	112.8	113.9	116.9	56.7	120.1
Redox Potential (mV)	150.1	175.4	193.3	177.3	170.9	231.0	124.2	111.9	-144.2	178.4
Turbidity (NTU)	5.5	5.5	3.6	3.2	-2.1	-2.1	5	3.1	40.3	-1.9
QA/QC Samples	T-DUP-1	None	None	None	None	None	None	None	None	None
Notes	Overcast with light rain. High of 13°C. Light winds. Standardized depth measurement taken at Ho Hum weir, 0.57m from top of weir to Ho Hum Lake TCA and 1.04m from top of weir to culvert to Moose Bay			Overcast. High of 13°C. Light winds.	Sunny. Temperature of 16°C. Light winds.	Sunny. Temperature of 16°C. Light winds.	Sunny. High of 17°C. Light winds. Standardized depth measurement taken at dock. 0.73m from the top of pier post with flagging tape.	Sunny. High of 17°C. Light winds.	Sunny with some cloud cover. High of 17°C. Light winds. Standardized depth measurement taken at pin flags, 0.08m depth. Flow estimate completed at adit, 0.37 m/s flow between pin flags.	Sunny with some cloud cover. High of 17°C. Light winds.

Notes:  
G=General Chemistry  
TM=Total Metals  
DM=Dissolved Metals  
PHC=PHC F1-F4 and BTEX  
O&G=Oil and Grease  
RAD=Radionuclides

SITE	Smallwood Mine				Contact Lake Mine		Contact Lake Reference
STATION	SM-1	SM-2	SM-6		CL-3	CL-26	CL-8
Lodestar Sample ID	GBL-2022-00001-022	GBL-2022-00001-023	GBL-2022-00001-024	GBL-2022-00001-025	GBL-2022-00001-009	GBL-2022-00001-010	GBL-2022-00001-013
Date	8-Aug-22	8-Aug-22	8-Aug-22		8-Aug-22	8-Aug-22	8-Aug-22
Personnel	Rebecca H., Adriana S., Tyrone Y.	Rebecca H., Adriana S., Tyrone Y.	Rebecca H., Adriana S., Tyrone Y.		Rebecca H., Adriana S., Tyrone Y.	Rebecca H., Adriana S., Tyrone Y.	Rebecca H., Adriana S., Tyrone Y.
Location Description	Smallwood Lake shoreline area, adjacent to wasterock	Smallwood Lake, shoreline area, by the dock	Smallwood Lake, downgradient of wasterock		Tailings Pond, south shore, outflow into stream	Contact Lake, ~50m offshore of discharge point of stream from Tailings Pond	Reference station, north end of Contact Lake
Latitude (Dec. Deg. N)	65.5813	65.5813	65.55816		65.99088	65.98978	66.00485
Longitude (Dec. Deg. W)	117.94434	117.94434	117.94188		117.80083	117.80171	117.89067
Sample Type	Shoreline	Shoreline	Open Water		Shoreline	Open Water	Open Water
Access	Foot	Foot	Float Plane		Foot	Float Plane	Float Plane
Method	Grab - Pole	Grab - Pole	Van Dorn		Grab - Pole	Grab	Grab
Sample Depth	Surface	Surface	1m	4m	Surface	Surface	Surface
Parameters	G, TM, DM, PHC	G, TM, DM, PHC	G, TM, DM, PHC		G, TM, DM, PHC, RAD	G, TM, DM, PHC, RAD	G, TM, DM, PHC, RAD
Temperature (°C)	19.0	18.3	19.0	18.7	20.2	16.7	16.3
pH	7.7	7.88	7.61	7.47	7.59	7.69	7.62
Conductivity (µS/cm)	110.0	111.0	109.0	108.0	239.0	47.0	47.0
Dissolved Oxygen (%)	113.3	111.8	111	109.4	105.8	111.7	110.6
Redox Potential (mV)	196.0	197.4	181.0	242.4	116.3	249.6	241.4
Turbidity (NTU)	3.4	2.7	-1.2	1.2	1.5	-2.40	-2.3
QA/QC Samples	None	None	None	None	CL-DUP-1	None	None
Notes	Sunny with some cloud cover. High of 17°C. Light winds.	Sunny with some cloud cover. High of 17°C. Light winds.	Sunny with some cloud cover. High of 17°C. Light winds.		Sunny. Temperature of 17°C. Calm winds.	Sunny. Temperature of 16°C. Light winds.	Sunny. Temperature of 16°C. Light winds.

Notes:  
G=General Chemistry  
TM=Total Metals  
DM=Dissolved Metals  
PHC=PHC F1-F4 and BTEX  
O&G=Oil and Grease  
RAD=Radionuclides

# Appendix **D**

## Photographic Log




# SITE PHOTOGRAPHS

**Site Name:**  
Terra Mine

**Site Location:**  
Great Bear Lake, NT

**Project No.**  
60662734

Photo No.	Date:	
1	2022-08-10	
<b>Description:</b>  <b>Terra Mine Station T-8:</b>  Ho Hum Lake TCA, middle.  Looking towards Mill.		

Photo No.	Date:	
2	2022-08-10	
<b>Description:</b>  <b>Terra Mine Station T-10:</b>  Moose Bay, middle, midway down airstrip.		



# SITE PHOTOGRAPHS

**Site Name:**  
Terra Mine

**Site Location:**  
Great Bear Lake, NT

**Project No.**  
60662734

<b>Photo No.</b> 3	<b>Date:</b> 2022-08-08	
<b>Description:</b>  <b>Terra Mine Ho Hum Weir</b>  Ho Hum weir looking at Ho Hum Lake TCA.  Looking southeast towards mine.		

<b>Photo No.</b> 4	<b>Date:</b> 2022-08-08	
<b>Description:</b>  <b>Terra Mine Ho Hum Weir</b>  Looking at weir, depth measurements collected up and downstream of weir.		



SITE PHOTOGRAPHS



Site Name:  
Background Stations

Site Location:  
Great Bear Lake, NT

Project No.  
60662734

Photo No. 5	Date: 2022-08-08	
<p><b>Description:</b></p> <p><b>Silver Bear Reference Station R-2:</b></p> <p>Reference Station, Belachey Lake, Near outlet.</p> <p>Looking south at outlet.</p>		

Photo No. 6	Date: 2022-08-08	
<p><b>Description:</b></p> <p><b>Silver Bear Reference Station R-3:</b></p> <p>Reference Station, Tutcho Lake, mid-lake.</p> <p>Looking south.</p>		



# SITE PHOTOGRAPHS

**Site Name:**  
Northrim Mine

**Site Location:**  
Great Bear Lake, NT

**Project No.**  
60662734






SITE PHOTOGRAPHS



Site Name:  
Northrim Mine

Site Location:  
Great Bear Lake, NT

Project No.  
60662734

Photo No.	Date:	
9	2022-08-08	
<p><b>Description:</b></p> <p><b>Northrim Mine Dock</b></p> <p>Water depth measurement collected from flagging tape on pole.</p> <p>Looking southwest.</p>		



# SITE PHOTOGRAPHS

**AECOM**

**Site Name:**  
Norex Mine

**Site Location:**  
Great Bear Lake, NT

**Project No.**  
60662734

Photo No.	Date:	
10	2022-08-08	
<b>Description:</b>  <b>Norex Mine Station NX-3:</b>  West seep of waste rock pile, sampled further away from waste rock pile. Depth measurement collected in centre of pin flags.  Looking east at west side of waste rock toe.		
		

Photo No.	Date:	
11	2022-08-08	
<b>Description:</b>  <b>Norex Mine Station NX-3:</b>  SNP Sign has fallen off post and was found ~5m away from original post, returned to post.		
		



# SITE PHOTOGRAPHS

**Site Name:**  
Norex Mine

**Site Location:**  
Great Bear Lake, NT

**Project No.**  
60662734



Photo No.	Date:	
12	2022-08-08	
<b>Description:</b>  <b>Norex Mine Station NX-3:</b> West seep of waste rock pile, ponding right at toe of pile (close up of previous photo).  Looking down at west toe of waste rock pile.		

Photo No.	Date:	
13	2022-08-08	
<b>Description:</b>  <b>Norex Mine Adit</b>  Looking at ice plug within adit at Norex Mine.		



SITE PHOTOGRAPHS



Site Name:  
Norex Mine

Site Location:  
Great Bear Lake, NT

Project No.  
60662734

<b>Photo No.</b> 14	<b>Date:</b> 2022-08-08	
<b>Description:</b>  <b>Norex Mine Adit</b>  Drainage out of adit, flow estimate completed by floating ear plug and timing between pin flags ~ 1m apart.		

Photo No. 15	Date: 2022-08-08	
<p><b>Description:</b></p> <p><b>Norex Mine Station NX-12:</b> Camsell River, offshore of outflow from Norex Mine.</p> <p>Looking at Northrim Mine.</p>		



SITE PHOTOGRAPHS



Site Name:  
Contact Lake Mine

Site Location:  
Great Bear Lake, NT

Project No.  
60662734

Photo No.	Date:	
16	2022-08-08	
<b>Description:</b>  <b>Smallwood Mine Station SM-1:</b>  Smallwood Lake, base of Smallwood waste rock pile.  Looking northeast		

Photo No.	Date:	
17	2022-08-08	
<b>Description:</b>  <b>Smallwood Mine Station SM-2:</b>  Smallwood Lake shoreline area, by the dock.		


**SITE PHOTOGRAPHS**



**Site Name:**  
Contact Lake Mine

**Site Location:**  
Great Bear Lake, NT

**Project No.**  
60662734

<b>Photo No.</b> 18	<b>Date:</b> 2022-08-08	
<b>Description:</b>  <b>Smallwood Mine Station SM-6:</b>  Smallwood Lake, offshore of waste rock pile.		



SITE PHOTOGRAPHS



Site Name:  
Contact Lake Mine

Site Location:  
Great Bear Lake, NT

Project No.  
60662734

Photo No.	Date:	
19	2022-08-08	
<p><b>Description:</b></p> <p><b>Contact Lake Mine Station CL-3:</b></p> <p>Tailings pond, south end of pond.</p> <p>Looking upstream of outlet towards mine</p>		

# SITE PHOTOGRAPHS

**AECOM**

**Site Name:**  
Contact Lake Mine

**Site Location:**  
Great Bear Lake, NT

**Project No.**  
60662734


Photo No.	Date:	
20	2022-08-08	
<b>Description:</b>  <b>Contact Lake Mine Station CL-26</b>  Contact Lake, offshore of discharge from Tailings Pond.  Looking south away from shore.		

Photo No.	Date:	
21	2022-08-08	
<b>Description:</b>  <b>Contact Lake Mine Station CL-8:</b>  Reference Station, north end of Contact Lake.  Looking southeast towards mine.		

# Appendix **E**

## Laboratory Certificates







**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**221626**

**- FINAL REPORT -**

---

**Prepared For:** AECOM

**Address:** 101, 18817 Stony Plain Road NW  
Edmonton, AB  
T5S 0C2

**Attn:** Jessica Stepney

**Facsimile:** (780) 486-7070

---

**Final report has been reviewed and approved by:**

---

**Glen Hudy**  
**Quality Assurance Officer**

---

**NOTES:**

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
  - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
  - Environment Canada
  - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

**ReportDate:** August-12-22

**Print Date:** *August-15-22*

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**221626**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GBL-2022-00002-005**

Taiga Sample ID: **001**

Client Project: 60662734  
Sample Type: Freshwater  
Received Date: 09-Aug-22  
Sampling Date: 08-Aug-22  
Sampling Time:  
Location: GBL Sites  
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b>Major Ions</b>						
Nitrate as Nitrogen	0.02	0.01	mg/L	10-Aug-22	TEL055	
Nitrate+Nitrite as Nitrogen	0.02	0.01	mg/L	10-Aug-22	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	

ReportDate: August-12-22  
Print Date: **August-15-22**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**221626**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GBL-2022-00002-006**

Taiga Sample ID: **002**

Client Project: 60662734  
Sample Type: Freshwater  
Received Date: 09-Aug-22  
Sampling Date: 08-Aug-22  
Sampling Time:  
Location: GBL Sites  
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b>Major Ions</b>						
Nitrate as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	

ReportDate: August-12-22  
Print Date: **August-15-22**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**221626**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GBL-2022-00002-007**

Taiga Sample ID: **003**

Client Project: 60662734  
Sample Type: Freshwater  
Received Date: 09-Aug-22  
Sampling Date: 08-Aug-22  
Sampling Time:  
Location: GBL Sites  
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b>Major Ions</b>						
Nitrate as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	

ReportDate: August-12-22  
Print Date: **August-15-22**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**221626**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GBL-2022-00002-008**

Taiga Sample ID: **004**

Client Project: 60662734  
Sample Type: Freshwater  
Received Date: 09-Aug-22  
Sampling Date: 08-Aug-22  
Sampling Time:  
Location: GBL Sites  
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b>Major Ions</b>						
Nitrate as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	

ReportDate: August-12-22  
Print Date: **August-15-22**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**221626**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GBL-2022-00002-009**

Taiga Sample ID: **005**

Client Project: 60662734  
Sample Type: Freshwater  
Received Date: 09-Aug-22  
Sampling Date: 08-Aug-22  
Sampling Time:  
Location: GBL Sites  
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b>Major Ions</b>						
Nitrate as Nitrogen	0.04	0.01	mg/L	10-Aug-22	TEL055	
Nitrate+Nitrite as Nitrogen	0.04	0.01	mg/L	10-Aug-22	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	

ReportDate: August-12-22  
Print Date: **August-15-22**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**221626**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GBL-2022-00002-010**

Taiga Sample ID: **006**

Client Project: 60662734  
Sample Type: Freshwater  
Received Date: 09-Aug-22  
Sampling Date: 08-Aug-22  
Sampling Time:  
Location: GBL Sites  
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b>Major Ions</b>						
Nitrate as Nitrogen	0.03	0.01	mg/L	10-Aug-22	TEL055	
Nitrate+Nitrite as Nitrogen	0.03	0.01	mg/L	10-Aug-22	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	

ReportDate: August-12-22  
Print Date: **August-15-22**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**221626**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GBL-2022-00002-011**

Taiga Sample ID: **007**

Client Project: 60662734  
Sample Type: Freshwater  
Received Date: 09-Aug-22  
Sampling Date: 08-Aug-22  
Sampling Time:  
Location: GBL Sites  
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b>Major Ions</b>						
Nitrate as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	

ReportDate: August-12-22  
Print Date: **August-15-22**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**221626**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GBL-2022-00002-012**

Taiga Sample ID: **008**

Client Project: 60662734  
Sample Type: Freshwater  
Received Date: 09-Aug-22  
Sampling Date: 08-Aug-22  
Sampling Time:  
Location: GBL Sites  
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b>Major Ions</b>						
Nitrate as Nitrogen	0.02	0.01	mg/L	10-Aug-22	TEL055	
Nitrate+Nitrite as Nitrogen	0.02	0.01	mg/L	10-Aug-22	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	

ReportDate: August-12-22  
Print Date: **August-15-22**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**221626**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GBL-2022-00002-013**

Taiga Sample ID: **009**

Client Project: 60662734  
Sample Type: Freshwater  
Received Date: 09-Aug-22  
Sampling Date: 08-Aug-22  
Sampling Time:  
Location: GBL Sites  
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b>Major Ions</b>						
Nitrate as Nitrogen	0.03	0.01	mg/L	10-Aug-22	TEL055	
Nitrate+Nitrite as Nitrogen	0.03	0.01	mg/L	10-Aug-22	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	

ReportDate: August-12-22  
Print Date: **August-15-22**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**221626**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GBL-2022-00002-015**

Taiga Sample ID: **010**

Client Project: 60662734  
Sample Type: Freshwater  
Received Date: 09-Aug-22  
Sampling Date: 08-Aug-22  
Sampling Time:  
Location: GBL Sites  
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b>Major Ions</b>						
Nitrate as Nitrogen	0.03	0.01	mg/L	10-Aug-22	TEL055	
Nitrate+Nitrite as Nitrogen	0.03	0.01	mg/L	10-Aug-22	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	

ReportDate: August-12-22  
Print Date: **August-15-22**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**221626**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GBL-2022-00002-017**

Taiga Sample ID: **011**

Client Project: 60662734  
Sample Type: Freshwater  
Received Date: 09-Aug-22  
Sampling Date: 08-Aug-22  
Sampling Time:  
Location: GBL Sites  
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b>Major Ions</b>						
Nitrate as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	

ReportDate: August-12-22  
Print Date: **August-15-22**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**221626**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GBL-2022-00002-020**

Taiga Sample ID: **012**

Client Project: 60662734  
Sample Type: Freshwater  
Received Date: 09-Aug-22  
Sampling Date: 08-Aug-22  
Sampling Time:  
Location: GBL Sites  
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b>Major Ions</b>						
Nitrate as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	

ReportDate: August-12-22  
Print Date: **August-15-22**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**221626**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GBL-2022-00002-021**

Taiga Sample ID: **013**

Client Project: 60662734  
Sample Type: Freshwater  
Received Date: 09-Aug-22  
Sampling Date: 08-Aug-22  
Sampling Time:  
Location: GBL Sites  
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
<b>Major Ions</b>						
Nitrate as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	

ReportDate: August-12-22  
Print Date: **August-15-22**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**221626**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GBL-2022-00002-022**

Taiga Sample ID: **014**

Client Project: 60662734  
Sample Type: Freshwater  
Received Date: 09-Aug-22  
Sampling Date: 08-Aug-22  
Sampling Time:  
Location: GBL Sites  
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b>Major Ions</b>						
Nitrate as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	

ReportDate: August-12-22  
Print Date: **August-15-22**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**221626**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GBL-2022-00002-023**

Taiga Sample ID: **015**

Client Project: 60662734  
Sample Type: Freshwater  
Received Date: 09-Aug-22  
Sampling Date: 08-Aug-22  
Sampling Time:  
Location: GBL Sites  
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b>Major Ions</b>						
Nitrate as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	10-Aug-22	TEL055	

ReportDate: August-12-22  
Print Date: **August-15-22**

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**221626**

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**- CERTIFICATE OF ANALYSIS -**

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**Client Sample ID:** **GBL-2022-00002-023**

**Taiga Sample ID:** **015**

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**\* Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

**ReportDate:** August-12-22

**Print Date:** *August-15-22*

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**221653**

**- FINAL REPORT -**

---

**Prepared For:** AECOM

**Address:** 101, 18817 Stony Plain Road NW  
Edmonton, AB  
T5S 0C2

**Attn:** Jessica Stepney

**Facsimile:** (780) 486-7070

---

**Final report has been reviewed and approved by:**

---

**Glen Hudy**  
**Quality Assurance Officer**

---

**NOTES:**

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
  - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
  - Environment Canada
  - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

**ReportDate:** August-16-22

**Print Date:** *August-16-22*

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**221653**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GBL-2022-0002-001**

Taiga Sample ID: **001**

Client Project: 60662734  
Sample Type: Freshwater  
Received Date: 12-Aug-22  
Sampling Date: 10-Aug-22  
Sampling Time: 13:45  
Location: GBL Sites  
Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b>Major Ions</b>						
Nitrate as Nitrogen	< 0.01	0.01	mg/L	13-Aug-22	TEL055	
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	13-Aug-22	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	13-Aug-22	TEL055	

ReportDate: August-16-22  
Print Date: **August-16-22**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**221653**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GBL-2022-0002-002**

Taiga Sample ID: **002**

Client Project: 60662734  
Sample Type: Freshwater  
Received Date: 12-Aug-22  
Sampling Date: 10-Aug-22  
Sampling Time: 13:45  
Location: GBL Sites  
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b>Major Ions</b>						
Nitrate as Nitrogen	< 0.01	0.01	mg/L	13-Aug-22	TEL055	
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	13-Aug-22	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	13-Aug-22	TEL055	

ReportDate: August-16-22  
Print Date: **August-16-22**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**221653**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GBL-2022-0002-003**

Taiga Sample ID: **003**

Client Project: 60662734  
Sample Type: Freshwater  
Received Date: 12-Aug-22  
Sampling Date: 10-Aug-22  
Sampling Time: 13:45  
Location: GBL Sites  
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b>Major Ions</b>						
Nitrate as Nitrogen	0.08	0.01	mg/L	13-Aug-22	TEL055	
Nitrate+Nitrite as Nitrogen	0.08	0.01	mg/L	13-Aug-22	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	13-Aug-22	TEL055	

ReportDate: August-16-22  
Print Date: **August-16-22**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**221653**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GBL-2022-0002-004**

Taiga Sample ID: **004**

Client Project: 60662734  
Sample Type: Freshwater  
Received Date: 12-Aug-22  
Sampling Date: 10-Aug-22  
Sampling Time: 13:45  
Location: GBL Sites  
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b>Major Ions</b>						
Nitrate as Nitrogen	< 0.01	0.01	mg/L	13-Aug-22	TEL055	
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	13-Aug-22	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	13-Aug-22	TEL055	

ReportDate: August-16-22  
Print Date: **August-16-22**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**221653**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GBL-2022-0002-014**

Taiga Sample ID: **005**

Client Project: 60662734  
Sample Type: Freshwater  
Received Date: 12-Aug-22  
Sampling Date: 10-Aug-22  
Sampling Time: 13:45  
Location: GBL Sites  
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
<b>Major Ions</b>						
Nitrate as Nitrogen	< 0.01	0.01	mg/L	13-Aug-22	TEL055	
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	13-Aug-22	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	13-Aug-22	TEL055	

ReportDate: August-16-22  
Print Date: **August-16-22**

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**221653**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GBL-2022-0002-016**

Taiga Sample ID: **006**

Client Project: 60662734  
Sample Type: Freshwater  
Received Date: 12-Aug-22  
Sampling Date: 10-Aug-22  
Sampling Time: 13:45  
Location: GBL Sites  
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b>Major Ions</b>						
Nitrate as Nitrogen	< 0.01	0.01	mg/L	13-Aug-22	TEL055	
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	13-Aug-22	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	13-Aug-22	TEL055	

ReportDate: August-16-22  
Print Date: **August-16-22**

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**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**221653**

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**- CERTIFICATE OF ANALYSIS -**

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**Client Sample ID:** **GBL-2022-0002-016**

**Taiga Sample ID:** **006**

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**\* Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

**ReportDate:** August-16-22

**Print Date:** *August-16-22*

*Page 8 of 8*

## CERTIFICATE OF ANALYSIS

**Work Order** : **EO2206499**

**Amendment** : **4**

**Client** : **AECOM Canada Ltd.**

**Contact** : Jessica Stepney

**Address** : 101 - 18817 Stony Plain Rd. NW  
Edmonton AB Canada T5S 0C2

**Telephone** : 780-486-5921

**Project** : 60662734

**PO** : 60662734

**C-O-C number** : ----

**Sampler** : RH

**Site** : ----

**Quote number** : EO2022-AECO100-012 Great Bear Lake

**No. of samples received** : 7

**No. of samples analysed** : 7

**Page** : 1 of 13

**Laboratory** : Edmonton - Environmental

**Account Manager** : Pamela Toledo

**Address** : 9450 - 17 Avenue NW  
Edmonton AB Canada T6N 1M9

**Telephone** : +1 780 413 5227

**Date Samples Received** : 15-Aug-2022 10:14

**Date Analysis Commenced** : 15-Aug-2022

**Issue Date** : 19-Sep-2022 08:48

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Alex Drake	Lab Analyst	Inorganics, Edmonton, Alberta
Austin Wasylyshyn	Lab Analyst	Metals, Edmonton, Alberta
Brieanna Allen	Production/Validation Manager	Inorganics, Burnaby, British Columbia
Dan Nguyen	Team Leader - Inorganics	Metals, Edmonton, Alberta
Daniel Nguyen	Lab Assistant	Inorganics, Edmonton, Alberta
Geoff Berg	Lab Analyst	Organics, Edmonton, Alberta
Jennifer Lupuliak	Lab Assistant	Metals, Edmonton, Alberta
Jessica Maitland	Lab Assistant	Inorganics, Edmonton, Alberta
Joan Wu	Lab Analyst	Metals, Edmonton, Alberta
Kari Mulroy	Lab Supervisor - Environmental	Organics, Edmonton, Alberta
Ping Yeung	Team Leader - Inorganics	Inorganics, Edmonton, Alberta
Ryan Huynh	Lab Assistant	Inorganics, Edmonton, Alberta
Samantha Mayor	Lab Assistant	Metals, Edmonton, Alberta
Shruti Mudliar	Lab Analyst	Inorganics, Edmonton, Alberta
Yan Zhang	Lab Analyst	Organics, Edmonton, Alberta





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

Qualifier	Description
RRV	Reported result verified by repeat analysis.
SFP	Sample was filtered and preserved at the laboratory.
SRU	Sample Received Unpreserved. Results may be biased low for indicated parameter(s).



Sub-Matrix: **Water**  
(Matrix: **Water**)

Client sample ID

Sub-Matrix: Water					Client sample ID	GBL-2022-0000 1-001	GBL-2022-0000 1-002	GBL-2022-0000 1-003	GBL-2022-0000 1-004	GBL-2022-0000 1-014
(Matrix: Water)										
Client sampling date / time					10-Aug-2022 13:45	10-Aug-2022 13:55	10-Aug-2022 14:05	10-Aug-2022 14:56	10-Aug-2022 14:15	
Analyte	CAS Number	Method	LOR	Unit	EO2206499-001	EO2206499-002	EO2206499-003	EO2206499-004	EO2206499-005	
					Result	Result	Result	Result	Result	
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	80.6	83.1	89.2	81.0	76.4	
solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0	
turbidity	----	E121	0.10	NTU	0.24	0.48	0.35	0.25	0.38	
conductivity	----	E100	2.0	µS/cm	162	168	184	154	162	
pH	----	E108	0.10	pH units	7.90	7.74	7.70	7.98	7.90	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	79.9	83.3	89.1	83.6	78.4	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	65.5	68.3	73.0	68.5	64.3	
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L	115	118	128	99.0	110	
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	
chloride	16887-00-6	E235.Cl	0.50	mg/L	7.13	7.58	8.81	2.76	7.33	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.623	0.626	0.687	0.146	0.614	
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	<0.020	<0.020	0.052	0.032	<0.020	
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	13.9	14.0	15.2	16.0	13.8	
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L	<0.0500	<0.0500	0.0520	<0.0500	<0.0500	
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	13.8 <sup>SFP</sup>	12.7 <sup>SFP</sup>	13.2 <sup>SFP</sup>	5.27 <sup>SFP</sup>	12.2 <sup>SFP</sup>	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	13.0	12.5	12.7	4.89	12.1	
Total Sulfides										
sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015 <sup>SRU</sup>	<0.0015 <sup>SRU</sup>	<0.0015 <sup>SRU</sup>	<0.0015 <sup>SRU</sup>	<0.0015 <sup>SRU</sup>	
sulfide, total (as H2S)	7783-06-4	E395	0.0016	mg/L	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	
Ion Balance										
anion sum	----	EC101	0.10	meq/L	1.83	1.90	2.06	1.79	1.81	
cation sum	----	EC101	0.10	meq/L	1.92	1.99	2.14	1.78	1.83	
ion balance (APHA)	----	EC101	0.010	%	2.40	2.31	1.90	0.280	0.549	
ion balance (cations/anions)	----	EC101	0.010	%	105	105	104	99.4	101	
Total Metals										



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-001	GBL-2022-0000 1-002	GBL-2022-0000 1-003	GBL-2022-0000 1-004	GBL-2022-0000 1-014
Client sampling date / time						10-Aug-2022 13:45	10-Aug-2022 13:55	10-Aug-2022 14:05	10-Aug-2022 14:56	10-Aug-2022 14:15
Analyte	CAS Number	Method	LOR	Unit	EO2206499-001	EO2206499-002	EO2206499-003	EO2206499-004	EO2206499-005	
					Result	Result	Result	Result	Result	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0266	0.0215	0.0168	0.0170	0.0247	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00097	0.00098	0.00105	<0.00010	0.00102	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.0622	0.0644	0.0737	0.00048	0.0617	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0152	0.0163	0.0179	0.0131	0.0151	
beryllium, total	7440-41-7	E420	0.000020	mg/L	0.000044	0.000045	0.000030	<0.000020	0.000027	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, total	7440-42-8	E420	0.010	mg/L	0.023	0.023	0.025	0.014	0.022	
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000288	0.0000181	0.0000153	0.0000473	0.0000319	
calcium, total	7440-70-2	E420	0.050	mg/L	23.3	24.5	27.6	18.9	24.4	
cesium, total	7440-46-2	E420	0.000010	mg/L	0.000035	0.000035	0.000034	<0.000010	0.000033	
chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00014	0.00017	0.00020	<0.00010	0.00013	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00892	0.00975	0.00978	0.00093	0.00919	
iron, total	7439-89-6	E420	0.010	mg/L	0.032	0.032	0.036	0.020	0.031	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000290	0.000191	0.000138	0.000126	0.000545	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0065	0.0070	0.0077	0.0028	0.0062	
magnesium, total	7439-95-4	E420	0.0050	mg/L	4.43	4.64	4.88	8.00	4.50	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00419	0.00739	0.0213	0.00217	0.00428	
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00210	0.00207	0.00214	0.000276	0.00208	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00392	0.00408	0.00423	<0.00050	0.00388	
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
potassium, total	7440-09-7	E420	0.050	mg/L	1.84	1.90	2.04	1.14	1.84	
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00476	0.00484	0.00513	0.00150	0.00460	
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000063	0.000066	0.000078	<0.000050	0.000062	
silicon, total	7440-21-3	E420	0.10	mg/L	1.14	1.30	1.69	0.92	1.11	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000012	0.000018	0.000013	<0.000010	0.000016	
sodium, total	7440-23-5	E420	0.050	mg/L	5.88	6.17	6.75	2.98	5.90	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0650	0.0703	0.0758	0.0681	0.0638	
sulfur, total	7704-34-9	E420	0.50	mg/L	5.19	5.25	5.58	5.96	4.95	
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-001	GBL-2022-0000 1-002	GBL-2022-0000 1-003	GBL-2022-0000 1-004	GBL-2022-0000 1-014
Client sampling date / time						10-Aug-2022 13:45	10-Aug-2022 13:55	10-Aug-2022 14:05	10-Aug-2022 14:56	10-Aug-2022 14:15
Analyte	CAS Number	Method	LOR	Unit	EO2206499-001	EO2206499-002	EO2206499-003	EO2206499-004	EO2206499-005	
					Result	Result	Result	Result	Result	
<b>Total Metals</b>										
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000026	0.000028	0.000012	<0.000010	<0.000010	<0.000010
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00087	0.00043	<0.00030	0.00090	0.00092	0.00092
tungsten, total	7440-33-7	E420	0.00010	mg/L	0.00015	0.00018	0.00017	<0.00010	0.00016	0.00016
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00188	0.00191	0.00224	0.000584	0.00197	0.00197
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0052	0.0213	0.0060	<0.0030	0.0099	0.0099
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0098	0.0099	0.0085	0.0029	0.0101	0.0101
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00108	0.00114	0.00116	<0.00010	0.00110	0.00110
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.0574	0.0586	0.0691	0.00038	0.0565	0.0565
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0141	0.0154	0.0168	0.0124	0.0148	0.0148
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	0.000024	0.000024	0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.024	0.024	0.026	0.015	0.022	0.022
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000126	0.0000142	0.0000144	0.0000090	0.0000135	0.0000135
calcium, dissolved	7440-70-2	E421	0.050	mg/L	24.5	25.1	27.2	18.7	22.7	22.7
cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000034	0.000035	0.000032	<0.000010	0.000033	0.000033
chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00835	0.00911	0.00929	0.00085	0.00825	0.00825
iron, dissolved	7439-89-6	E421	0.030	mg/L	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0074	0.0071	0.0076	0.0026	0.0060	0.0060
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	4.72	4.96	5.17	8.34	4.80	4.80
manganese, dissolved	7439-96-5	E421	0.00500	mg/L	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00207	0.00211	0.00221	0.000276	0.00219	0.00219
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00371	0.00386	0.00424	<0.00050	0.00367	0.00367



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-001	GBL-2022-0000 1-002	GBL-2022-0000 1-003	GBL-2022-0000 1-004	GBL-2022-0000 1-014
Client sampling date / time						10-Aug-2022 13:45	10-Aug-2022 13:55	10-Aug-2022 14:05	10-Aug-2022 14:56	10-Aug-2022 14:15
Analyte	CAS Number	Method	LOR	Unit	EO2206499-001	EO2206499-002	EO2206499-003	EO2206499-004	EO2206499-005	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.99	2.12	2.24	1.24	1.87	
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00450	0.00475	0.00527	0.00143	0.00456	
selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0.000082	<0.000050	<0.000050	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.06	1.24	1.66	0.877	1.02	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	7440-23-5	E421	0.050	mg/L	6.00	6.26	6.81	2.98	5.81	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0669	0.0680	0.0745	0.0663	0.0661	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	5.21	4.99	5.51	5.58	4.85	
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	0.00019	0.00018	0.00018	<0.00010	0.00018	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00204	0.00206	0.00226	0.000621	0.00205	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0024	0.0035	0.0033	<0.0010	0.0026	
zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	0.00025	
dissolved mercury filtration location	----	EP509	-	-	Laboratory	Laboratory	Laboratory	Laboratory	Laboratory	
dissolved metals filtration location	----	EP421	-	-	Laboratory	Laboratory	Laboratory	Laboratory	Laboratory	
<b>Aggregate Organics</b>										
oil & grease (FTIR)	----	E568	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
<b>Volatile Organic Compounds [BTEXS+MTBE]</b>										
benzene	71-43-2	E611A	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
ethylbenzene	100-41-4	E611A	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
toluene	108-88-3	E611A	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
xylene, m+p-	179601-23-1	E611A	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
xylene, o-	95-47-6	E611A	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
xylenes, total	1330-20-7	E611A	0.75	µg/L	<0.75	<0.75	<0.75	<0.75	<0.75	
BTEX, total	----	E611A	1.2	µg/L	<1.2	<1.2	<1.2	<1.2	<1.2	





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-001	GBL-2022-0000 1-002	GBL-2022-0000 1-003	GBL-2022-0000 1-004	GBL-2022-0000 1-014
Client sampling date / time						10-Aug-2022 13:45	10-Aug-2022 13:55	10-Aug-2022 14:05	10-Aug-2022 14:56	10-Aug-2022 14:15
Analyte	CAS Number	Method	LOR	Unit		EO2206499-001	EO2206499-002	EO2206499-003	EO2206499-004	EO2206499-005
						Result	Result	Result	Result	Result
<b>Volatile Organic Compounds Surrogates</b>										
bromofluorobenzene, 4-	460-00-4	E611A	1.0	%		81.2	81.8	81.2	80.7	81.8
difluorobenzene, 1,4-	540-36-3	E611A	1.0	%		96.7	98.2	91.7	109	104
<b>Hydrocarbons</b>										
F1 (C6-C10)	----	E581.F1	100	µg/L		<100	<100	<100	<100	<100
F1-BTEX	----	EC580	100	µg/L		<100	<100	<100	<100	<100
F2 (C10-C16)	----	E601	100	µg/L		<100	<100	<100	<100	<100
F3 (C16-C34)	----	E601	250	µg/L		<250	<250	<250	<250	<250
F4 (C34-C50)	----	E601	250	µg/L		<250	<250	<250	<250	<250
hydrocarbons, total (C6-C50)	----	EC581	400	µg/L		<400	<400	<400	<400	<400
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	E601	1.0	%		94.8	94.1	95.8	97.1	96.0
dichlorotoluene, 3,4-	97-75-0	E581.F1	1.0	%		112	111	114	109	114

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-016	GBL-2022-0000 1-030	----	----	----
					Client sampling date / time	10-Aug-2022 15:10	10-Aug-2022 15:15	----	----	----
Analyte	CAS Number	Method	LOR	Unit	EO2206499-006	EO2206499-007	-----	-----	-----	
					Result	Result	----	----	----	
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	<0.50	----	----	----	----	
solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	----	----	----	----	
turbidity	----	E121	0.10	NTU	0.13	----	----	----	----	
conductivity	----	E100	2.0	µS/cm	<2.0	----	----	----	----	
pH	----	E108	0.10	pH units	5.44	----	----	----	----	
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	<1.0	----	----	----	----	
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	----	----	----	----	
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	----	----	----	----	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L	<1.0	----	----	----	----	
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	----	----	----	----	
chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	----	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	----	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	<0.020	----	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	<0.010	----	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	----	----	----	----	
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L	<0.0500	----	----	----	----	
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.50 <sup>SFP</sup>	----	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	----	----	----	----	
Total Sulfides										
sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015 <sup>SRU</sup>	----	----	----	----	
sulfide, total (as H2S)	7783-06-4	E395	0.0016	mg/L	<0.0016	----	----	----	----	
Ion Balance										
anion sum	----	EC101	0.10	meq/L	<0.10	----	----	----	----	
cation sum	----	EC101	0.10	meq/L	<0.10	----	----	----	----	
ion balance (APHA)	----	EC101	0.010	%	<0.010	----	----	----	----	
ion balance (cations/anions)	----	EC101	0.010	%	100	----	----	----	----	
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-016	GBL-2022-0000 1-030	----	----	----
Client sampling date / time						10-Aug-2022 15:10	10-Aug-2022 15:15	----	----	----
Analyte	CAS Number	Method	LOR	Unit	EO2206499-006	EO2206499-007	-----	-----	-----	-----
					Result	Result	----	----	----	----
<b>Total Metals</b>										
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010 <sup>RRV</sup>	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00016	<0.00010	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	----	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000156	0.0000216	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	0.058	<0.050	----	----	----	----
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----	----
chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	----	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	0.0073	<0.0050	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00041	<0.00010	----	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	----	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	<0.050	<0.050	----	----	----	----
rubidium, total	7440-17-7	E420	0.00020	mg/L	<0.00020	<0.00020	----	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	<0.10	<0.10	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L	<0.050	<0.050	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L	<0.00020	<0.00020	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	----	----	----	----
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000026	0.000020	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-016	GBL-2022-0000 1-030	----	----	----
Client sampling date / time						10-Aug-2022 15:10	10-Aug-2022 15:15	----	----	----
Analyte	CAS Number	Method	LOR	Unit	EO2206499-006	EO2206499-007	-----	-----	-----	-----
					Result	Result	----	----	----	----
<b>Total Metals</b>										
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	----	----	----	----
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000014	0.000018	----	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0060	0.0173	----	----	----	----
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	----	----	----	----
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00019	<0.00010	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	0.000071	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000056	<0.0000050	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	<0.050	----	----	----	----
cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	----	<0.010	----	----	----	----
iron, dissolved	7439-89-6	E421	0.030	mg/L	<0.030	----	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	<0.0050	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	----	<0.00010	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00500	mg/L	<0.00500	----	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	----





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-016	GBL-2022-0000 1-030	----	----	----
Client sampling date / time					10-Aug-2022 15:10	10-Aug-2022 15:15	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	EO2206499-006	EO2206499-007	-----	-----	-----	
					Result	Result	----	----	----	
Dissolved Metals										
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	<0.050	----	----	----	
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	<0.00020	<0.00020	----	----	----	
selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	<0.050	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
sodium, dissolved	7440-23-5	E421	0.050	mg/L	<0.050	0.068	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	<0.00020	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	----	----	----	
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000019	----	----	----	
thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	<0.00020	----	----	----	----	
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	----	<0.00030	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Laboratory	Laboratory	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Laboratory	Laboratory	----	----	----	
Aggregate Organics										
oil & grease (FTIR)	----	E568	1.0	mg/L	<1.0	----	----	----	----	
Volatile Organic Compounds [BTEXS+MTBE]										
benzene	71-43-2	E611A	0.50	µg/L	<0.50	----	----	----	----	
ethylbenzene	100-41-4	E611A	0.50	µg/L	<0.50	----	----	----	----	
toluene	108-88-3	E611A	0.50	µg/L	<0.50	----	----	----	----	
xylene, m+p-	179601-23-1	E611A	0.50	µg/L	<0.50	----	----	----	----	
xylene, o-	95-47-6	E611A	0.50	µg/L	<0.50	----	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-016	GBL-2022-0000 1-030	----	----	----
Client sampling date / time						10-Aug-2022 15:10	10-Aug-2022 15:15	----	----	----
Analyte	CAS Number	Method	LOR	Unit	EO2206499-006	EO2206499-007	-----	-----	-----	-----
					Result	Result	----	----	----	----
Volatile Organic Compounds [BTEXS+MTBE]										
xylene, total	1330-20-7	E611A	0.75	µg/L	<0.75	----	----	----	----	----
BTEX, total	----	E611A	1.2	µg/L	<1.2	----	----	----	----	----
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611A	1.0	%	80.1	----	----	----	----	----
difluorobenzene, 1,4-	540-36-3	E611A	1.0	%	97.1	----	----	----	----	----
Hydrocarbons										
F1 (C6-C10)	----	E581.F1	100	µg/L	<100	----	----	----	----	----
F1-BTEX	----	EC580	100	µg/L	<100	----	----	----	----	----
F2 (C10-C16)	----	E601	100	µg/L	<100	----	----	----	----	----
F3 (C16-C34)	----	E601	250	µg/L	<250	----	----	----	----	----
F4 (C34-C50)	----	E601	250	µg/L	<250	----	----	----	----	----
hydrocarbons, total (C6-C50)	----	EC581	400	µg/L	<400	----	----	----	----	----
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	E601	1.0	%	97.2	----	----	----	----	----
dichlorotoluene, 3,4-	97-75-0	E581.F1	1.0	%	121	----	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: EO2206499	Page	: 1 of 26
Amendment	: 4		
Client	: AECOM Canada Ltd.	Laboratory	: Edmonton - Environmental
Contact	: Jessica Stepney	Account Manager	: Pamela Toledo
Address	: 101 - 18817 Stony Plain Rd. NW Edmonton AB Canada T5S 0C2	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	: 780-486-5921	Telephone	: +1 780 413 5227
Project	: 60662734	Date Samples Received	: 15-Aug-2022 10:14
PO	: 60662734	Issue Date	: 19-Sep-2022 08:49
C-O-C number	: ----		
Sampler	: RH		
Site	: ----		
Quote number	: EO2022-AECO100-012 Great Bear Lake		
No. of samples received	: 7		
No. of samples analysed	: 7		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

### **Workorder Comments**

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

### **Summary of Outliers**

#### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- Matrix Spike outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

#### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

#### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### **Outliers : Frequency of Quality Control Samples**

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.





## Outliers : Quality Control Samples

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>								
Dissolved Metals	Anonymous	Anonymous	selenium, dissolved	7782-49-2	E421	134 % <sup>MES</sup>	70.0-130%	Recovery greater than upper data quality objective

## Result Qualifiers

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Aggregate Organics : Oil and Grease by IR										
Amber glass (hydrochloric acid) GBL-2022-00001-001	E568	10-Aug-2022	16-Aug-2022	28 days	6 days	✓	17-Aug-2022	40 days	1 days	✓
Aggregate Organics : Oil and Grease by IR										
Amber glass (hydrochloric acid) GBL-2022-00001-002	E568	10-Aug-2022	16-Aug-2022	28 days	6 days	✓	17-Aug-2022	40 days	1 days	✓
Aggregate Organics : Oil and Grease by IR										
Amber glass (hydrochloric acid) GBL-2022-00001-003	E568	10-Aug-2022	16-Aug-2022	28 days	6 days	✓	17-Aug-2022	40 days	1 days	✓
Aggregate Organics : Oil and Grease by IR										
Amber glass (hydrochloric acid) GBL-2022-00001-004	E568	10-Aug-2022	16-Aug-2022	28 days	6 days	✓	17-Aug-2022	40 days	1 days	✓
Aggregate Organics : Oil and Grease by IR										
Amber glass (hydrochloric acid) GBL-2022-00001-014	E568	10-Aug-2022	16-Aug-2022	28 days	6 days	✓	17-Aug-2022	40 days	1 days	✓
Aggregate Organics : Oil and Grease by IR										
Amber glass (hydrochloric acid) GBL-2022-00001-016	E568	10-Aug-2022	16-Aug-2022	28 days	6 days	✓	17-Aug-2022	40 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) GBL-2022-00001-001	E298	10-Aug-2022	30-Aug-2022	----	----		30-Aug-2022	28 days	20 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) GBL-2022-00001-002	E298	10-Aug-2022	30-Aug-2022	----	----		30-Aug-2022	28 days	20 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) GBL-2022-00001-003	E298	10-Aug-2022	30-Aug-2022	----	----		30-Aug-2022	28 days	20 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) GBL-2022-00001-004	E298	10-Aug-2022	30-Aug-2022	----	----		30-Aug-2022	28 days	20 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) GBL-2022-00001-014	E298	10-Aug-2022	30-Aug-2022	----	----		30-Aug-2022	28 days	20 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) GBL-2022-00001-016	E298	10-Aug-2022	30-Aug-2022	----	----		30-Aug-2022	28 days	20 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE GBL-2022-00001-001	E235.Cl	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	5 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE GBL-2022-00001-002	E235.Cl	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	5 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE GBL-2022-00001-003	E235.Cl	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	5 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE GBL-2022-00001-004	E235.Cl	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	5 days	✓



Matrix: **Water**

Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Chloride in Water by IC										
HDPE GBL-2022-00001-014	E235.Cl	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	5 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE GBL-2022-00001-016	E235.Cl	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	5 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE GBL-2022-00001-001	E235.F	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	5 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE GBL-2022-00001-002	E235.F	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	5 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE GBL-2022-00001-003	E235.F	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	5 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE GBL-2022-00001-004	E235.F	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	5 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE GBL-2022-00001-014	E235.F	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	5 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE GBL-2022-00001-016	E235.F	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	5 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE GBL-2022-00001-001	E235.NO3	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	5 days	✖ EHTR-FM





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Nitrate in Water by IC										
HDPE GBL-2022-00001-002	E235.NO3	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	5 days	<div><div>*</div><div>EHTR-FM</div></div>
Anions and Nutrients : Nitrate in Water by IC										
HDPE GBL-2022-00001-003	E235.NO3	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	5 days	<div><div>*</div><div>EHTR-FM</div></div>
Anions and Nutrients : Nitrate in Water by IC										
HDPE GBL-2022-00001-004	E235.NO3	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	5 days	<div><div>*</div><div>EHTR-FM</div></div>
Anions and Nutrients : Nitrate in Water by IC										
HDPE GBL-2022-00001-014	E235.NO3	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	5 days	<div><div>*</div><div>EHTR-FM</div></div>
Anions and Nutrients : Nitrate in Water by IC										
HDPE GBL-2022-00001-016	E235.NO3	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	5 days	<div><div>*</div><div>EHTR-FM</div></div>
Anions and Nutrients : Nitrite in Water by IC										
HDPE GBL-2022-00001-001	E235.NO2	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	5 days	<div><div>*</div><div>EHTR-FM</div></div>
Anions and Nutrients : Nitrite in Water by IC										
HDPE GBL-2022-00001-002	E235.NO2	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	5 days	<div><div>*</div><div>EHTR-FM</div></div>
Anions and Nutrients : Nitrite in Water by IC										
HDPE GBL-2022-00001-003	E235.NO2	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	5 days	<div><div>*</div><div>EHTR-FM</div></div>
Anions and Nutrients : Nitrite in Water by IC										
HDPE GBL-2022-00001-004	E235.NO2	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	5 days	<div><div>*</div><div>EHTR-FM</div></div>



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Nitrite in Water by IC										
HDPE GBL-2022-00001-014	E235.NO2	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	5 days	<div>✖ EHTR-FM</div>
Anions and Nutrients : Nitrite in Water by IC										
HDPE GBL-2022-00001-016	E235.NO2	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	5 days	<div>✖ EHTR-FM</div>
Anions and Nutrients : Sulfate in Water by IC										
HDPE GBL-2022-00001-001	E235.SO4	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	5 days	<div>✔</div>
Anions and Nutrients : Sulfate in Water by IC										
HDPE GBL-2022-00001-002	E235.SO4	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	5 days	<div>✔</div>
Anions and Nutrients : Sulfate in Water by IC										
HDPE GBL-2022-00001-003	E235.SO4	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	5 days	<div>✔</div>
Anions and Nutrients : Sulfate in Water by IC										
HDPE GBL-2022-00001-004	E235.SO4	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	5 days	<div>✔</div>
Anions and Nutrients : Sulfate in Water by IC										
HDPE GBL-2022-00001-014	E235.SO4	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	5 days	<div>✔</div>
Anions and Nutrients : Sulfate in Water by IC										
HDPE GBL-2022-00001-016	E235.SO4	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	5 days	<div>✔</div>
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) GBL-2022-00001-001	E509	10-Aug-2022	14-Sep-2022	----	----		14-Sep-2022	28 days	35 days	<div>✖ EHT</div>



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) GBL-2022-00001-002	E509	10-Aug-2022	14-Sep-2022	----	----		14-Sep-2022	28 days	35 days	* EHT
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) GBL-2022-00001-003	E509	10-Aug-2022	14-Sep-2022	----	----		14-Sep-2022	28 days	35 days	* EHT
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) GBL-2022-00001-004	E509	10-Aug-2022	14-Sep-2022	----	----		14-Sep-2022	28 days	35 days	* EHT
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) GBL-2022-00001-014	E509	10-Aug-2022	14-Sep-2022	----	----		14-Sep-2022	28 days	35 days	* EHT
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) GBL-2022-00001-016	E509	10-Aug-2022	14-Sep-2022	----	----		14-Sep-2022	28 days	35 days	* EHT
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE dissolved (nitric acid) GBL-2022-00001-030	E509	10-Aug-2022	15-Sep-2022	28 days	36 days	* EHT	15-Sep-2022	-8 days	0 days	* EHT
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) GBL-2022-00001-001	E421	10-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) GBL-2022-00001-002	E421	10-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) GBL-2022-00001-003	E421	10-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	180 days	7 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) GBL-2022-00001-004	E421	10-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) GBL-2022-00001-014	E421	10-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) GBL-2022-00001-016	E421	10-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) GBL-2022-00001-030	E421	10-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	180 days	7 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) GBL-2022-00001-001	E581.F1	10-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	14 days	6 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) GBL-2022-00001-002	E581.F1	10-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	14 days	6 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) GBL-2022-00001-003	E581.F1	10-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	14 days	6 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) GBL-2022-00001-004	E581.F1	10-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	14 days	6 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) GBL-2022-00001-014	E581.F1	10-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	14 days	6 days	✓





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) GBL-2022-00001-016	E581.F1	10-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	14 days	6 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) GBL-2022-00001-001	E601	10-Aug-2022	17-Aug-2022	14 days	7 days	✓	18-Aug-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) GBL-2022-00001-002	E601	10-Aug-2022	17-Aug-2022	14 days	7 days	✓	18-Aug-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) GBL-2022-00001-003	E601	10-Aug-2022	17-Aug-2022	14 days	7 days	✓	18-Aug-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) GBL-2022-00001-004	E601	10-Aug-2022	17-Aug-2022	14 days	7 days	✓	18-Aug-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) GBL-2022-00001-014	E601	10-Aug-2022	17-Aug-2022	14 days	7 days	✓	18-Aug-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) GBL-2022-00001-016	E601	10-Aug-2022	17-Aug-2022	14 days	7 days	✓	18-Aug-2022	40 days	1 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) GBL-2022-00001-001	E358-L	10-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	28 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) GBL-2022-00001-002	E358-L	10-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	28 days	8 days	✓



Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) GBL-2022-00001-003	E358-L	10-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	28 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) GBL-2022-00001-004	E358-L	10-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	28 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) GBL-2022-00001-014	E358-L	10-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	28 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) GBL-2022-00001-016	E358-L	10-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) GBL-2022-00001-001	E355-L	10-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) GBL-2022-00001-002	E355-L	10-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) GBL-2022-00001-003	E355-L	10-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) GBL-2022-00001-004	E355-L	10-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) GBL-2022-00001-014	E355-L	10-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	28 days	7 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) GBL-2022-00001-016	E355-L	10-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	28 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE GBL-2022-00001-001	E290	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE GBL-2022-00001-002	E290	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE GBL-2022-00001-003	E290	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE GBL-2022-00001-004	E290	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE GBL-2022-00001-014	E290	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE GBL-2022-00001-016	E290	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	14 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE GBL-2022-00001-001	E100	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE GBL-2022-00001-002	E100	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	5 days	✓



Matrix: **Water**

Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : Conductivity in Water										
HDPE GBL-2022-00001-003	E100	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE GBL-2022-00001-004	E100	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE GBL-2022-00001-014	E100	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE GBL-2022-00001-016	E100	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	5 days	✓
Physical Tests : pH by Meter										
HDPE GBL-2022-00001-001	E108	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	0.25 hrs	0.26 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE GBL-2022-00001-002	E108	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	0.25 hrs	0.26 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE GBL-2022-00001-003	E108	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	0.25 hrs	0.26 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE GBL-2022-00001-004	E108	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	0.25 hrs	0.26 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE GBL-2022-00001-014	E108	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	0.25 hrs	0.26 hrs	✖ EHTR-FM





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : pH by Meter										
HDPE GBL-2022-00001-016	E108	10-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	0.25 hrs	0.26 hrs	* EHTR-FM
Physical Tests : TSS by Gravimetry										
HDPE GBL-2022-00001-001	E160	10-Aug-2022	----	----	----		15-Aug-2022	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE GBL-2022-00001-002	E160	10-Aug-2022	----	----	----		15-Aug-2022	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE GBL-2022-00001-003	E160	10-Aug-2022	----	----	----		15-Aug-2022	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE GBL-2022-00001-004	E160	10-Aug-2022	----	----	----		15-Aug-2022	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE GBL-2022-00001-014	E160	10-Aug-2022	----	----	----		15-Aug-2022	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE GBL-2022-00001-016	E160	10-Aug-2022	----	----	----		15-Aug-2022	7 days	5 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE GBL-2022-00001-001	E121	10-Aug-2022	----	----	----		29-Aug-2022	3 days	19 days	* EHTR
Physical Tests : Turbidity by Nephelometry										
HDPE GBL-2022-00001-002	E121	10-Aug-2022	----	----	----		29-Aug-2022	3 days	19 days	* EHTR



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : Turbidity by Nephelometry										
HDPE GBL-2022-00001-003	E121	10-Aug-2022	----	----	----		29-Aug-2022	3 days	19 days	<div>✖ EHTR</div>
Physical Tests : Turbidity by Nephelometry										
HDPE GBL-2022-00001-004	E121	10-Aug-2022	----	----	----		29-Aug-2022	3 days	19 days	<div>✖ EHTR</div>
Physical Tests : Turbidity by Nephelometry										
HDPE GBL-2022-00001-014	E121	10-Aug-2022	----	----	----		29-Aug-2022	3 days	19 days	<div>✖ EHTR</div>
Physical Tests : Turbidity by Nephelometry										
HDPE GBL-2022-00001-016	E121	10-Aug-2022	----	----	----		29-Aug-2022	3 days	19 days	<div>✖ EHTR</div>
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) GBL-2022-00001-001	E508	10-Aug-2022	31-Aug-2022	----	----		31-Aug-2022	28 days	21 days	<div>✔</div>
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) GBL-2022-00001-002	E508	10-Aug-2022	31-Aug-2022	----	----		31-Aug-2022	28 days	21 days	<div>✔</div>
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) GBL-2022-00001-003	E508	10-Aug-2022	31-Aug-2022	----	----		31-Aug-2022	28 days	21 days	<div>✔</div>
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) GBL-2022-00001-004	E508	10-Aug-2022	31-Aug-2022	----	----		31-Aug-2022	28 days	21 days	<div>✔</div>
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) GBL-2022-00001-014	E508	10-Aug-2022	31-Aug-2022	----	----		31-Aug-2022	28 days	21 days	<div>✔</div>



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) GBL-2022-00001-016	E508	10-Aug-2022	31-Aug-2022	----	----		31-Aug-2022	28 days	21 days	✓
Total Metals : Total Mercury in Water by CVAAS										
HDPE total (nitric acid) GBL-2022-00001-030	E508	10-Aug-2022	17-Sep-2022	28 days	38 days	* EHT	17-Sep-2022	-10 days	0 days	* EHT
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) GBL-2022-00001-001	E420	10-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) GBL-2022-00001-002	E420	10-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) GBL-2022-00001-003	E420	10-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) GBL-2022-00001-004	E420	10-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) GBL-2022-00001-014	E420	10-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) GBL-2022-00001-016	E420	10-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) GBL-2022-00001-030	E420	10-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	8 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE total (zinc acetate+sodium hydroxide) GBL-2022-00001-001	E395	10-Aug-2022	----	----	----		12-Sep-2022	7 days	33 days	✖ EHT
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE total (zinc acetate+sodium hydroxide) GBL-2022-00001-002	E395	10-Aug-2022	----	----	----		12-Sep-2022	7 days	33 days	✖ EHT
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE total (zinc acetate+sodium hydroxide) GBL-2022-00001-003	E395	10-Aug-2022	----	----	----		12-Sep-2022	7 days	33 days	✖ EHT
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE total (zinc acetate+sodium hydroxide) GBL-2022-00001-004	E395	10-Aug-2022	----	----	----		12-Sep-2022	7 days	33 days	✖ EHT
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE total (zinc acetate+sodium hydroxide) GBL-2022-00001-014	E395	10-Aug-2022	----	----	----		12-Sep-2022	7 days	33 days	✖ EHT
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE total (zinc acetate+sodium hydroxide) GBL-2022-00001-016	E395	10-Aug-2022	----	----	----		12-Sep-2022	7 days	33 days	✖ EHT
Volatile Organic Compounds [BTEXS+MTBE] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) GBL-2022-00001-001	E611A	10-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	14 days	6 days	✔
Volatile Organic Compounds [BTEXS+MTBE] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) GBL-2022-00001-002	E611A	10-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	14 days	6 days	✔
Volatile Organic Compounds [BTEXS+MTBE] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) GBL-2022-00001-003	E611A	10-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	14 days	6 days	✔





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Volatile Organic Compounds [BTEXS+MTBE] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) GBL-2022-00001-004	E611A	10-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	14 days	6 days	✓
Volatile Organic Compounds [BTEXS+MTBE] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) GBL-2022-00001-014	E611A	10-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	14 days	6 days	✓
Volatile Organic Compounds [BTEXS+MTBE] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) GBL-2022-00001-016	E611A	10-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	14 days	6 days	✓

**Legend & Qualifier Definitions**

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended  
 EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
 EHT: Exceeded ALS recommended hold time prior to analysis.  
 Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	603209	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	625002	1	20	5.0	5.0	✓
BTEX by Headspace GC-MS	E611A	604495	1	20	5.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	604496	1	19	5.2	5.0	✓
Chloride in Water by IC	E235.Cl	603090	1	20	5.0	5.0	✓
Conductivity in Water	E100	603208	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	646330	2	26	7.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	605043	3	57	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	608646	2	39	5.1	5.0	✓
Fluoride in Water by IC	E235.F	603091	1	14	7.1	5.0	✓
Nitrate in Water by IC	E235.NO3	603092	1	14	7.1	5.0	✓
Nitrite in Water by IC	E235.NO2	603094	1	14	7.1	5.0	✓
pH by Meter	E108	603207	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	603093	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	627190	2	17	11.7	5.0	✓
Total Metals in Water by CRC ICPMS	E420	607762	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	606693	1	20	5.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	643193	0	6	0.0	5.0	✗
TSS by Gravimetry	E160	602958	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	623631	1	7	14.2	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	603209	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	625002	1	20	5.0	5.0	✓
BTEX by Headspace GC-MS	E611A	604495	1	20	5.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	604496	1	19	5.2	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	606731	1	16	6.2	5.0	✓
Chloride in Water by IC	E235.Cl	603090	1	20	5.0	5.0	✓
Conductivity in Water	E100	603208	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	646330	2	26	7.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	605043	3	57	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	608646	2	39	5.1	5.0	✓
Fluoride in Water by IC	E235.F	603091	1	14	7.1	5.0	✓
Nitrate in Water by IC	E235.NO3	603092	1	14	7.1	5.0	✓
Nitrite in Water by IC	E235.NO2	603094	1	14	7.1	5.0	✓
Oil and Grease by IR	E568	604859	1	20	5.0	5.0	✓
pH by Meter	E108	603207	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	603093	1	14	7.1	5.0	✓



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Control Samples (LCS) - Continued							
Total Mercury in Water by CVAAS	E508	627190	2	17	11.7	5.0	✔
Total Metals in Water by CRC ICPMS	E420	607762	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	606693	1	20	5.0	5.0	✔
Total Sulfide by Colourimetry (Automated Flow)	E395	643193	1	6	16.6	5.0	✔
TSS by Gravimetry	E160	602958	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	623631	1	7	14.2	5.0	✔
Method Blanks (MB)							
Alkalinity Species by Titration	E290	603209	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	625002	1	20	5.0	5.0	✔
BTEX by Headspace GC-MS	E611A	604495	1	20	5.0	5.0	✔
CCME PHC - F1 by Headspace GC-FID	E581.F1	604496	1	19	5.2	5.0	✔
CCME PHCs - F2-F4 by GC-FID	E601	606731	1	16	6.2	5.0	✔
Chloride in Water by IC	E235.Cl	603090	1	20	5.0	5.0	✔
Conductivity in Water	E100	603208	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	646330	2	26	7.6	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	605043	3	57	5.2	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	608646	2	39	5.1	5.0	✔
Fluoride in Water by IC	E235.F	603091	1	14	7.1	5.0	✔
Nitrate in Water by IC	E235.NO3	603092	1	14	7.1	5.0	✔
Nitrite in Water by IC	E235.NO2	603094	1	14	7.1	5.0	✔
Oil and Grease by IR	E568	604859	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	603093	1	14	7.1	5.0	✔
Total Mercury in Water by CVAAS	E508	627190	2	17	11.7	5.0	✔
Total Metals in Water by CRC ICPMS	E420	607762	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	606693	1	20	5.0	5.0	✔
Total Sulfide by Colourimetry (Automated Flow)	E395	643193	1	6	16.6	5.0	✔
TSS by Gravimetry	E160	602958	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	623631	1	7	14.2	5.0	✔
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	625002	1	20	5.0	5.0	✔
BTEX by Headspace GC-MS	E611A	604495	1	20	5.0	5.0	✔
Chloride in Water by IC	E235.Cl	603090	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	646330	2	26	7.6	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	605043	3	57	5.2	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	608646	2	39	5.1	5.0	✔
Fluoride in Water by IC	E235.F	603091	1	14	7.1	5.0	✔
Nitrate in Water by IC	E235.NO3	603092	1	14	7.1	5.0	✔
Nitrite in Water by IC	E235.NO2	603094	1	14	7.1	5.0	✔
Sulfate in Water by IC	E235.SO4	603093	1	14	7.1	5.0	✔
Total Mercury in Water by CVAAS	E508	627190	2	17	11.7	5.0	✔

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 Work Order : EO2206499 Amendment 4  
 Client : AECOM Canada Ltd.  
 Project : 60662734



Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Matrix Spikes (MS) - Continued							
Total Metals in Water by CRC ICPMS	E420	607762	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	606693	1	20	5.0	5.0	✔
Total Sulfide by Colourimetry (Automated Flow)	E395	643193	0	6	0.0	5.0	✖





## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Edmonton - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Edmonton - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally $20 \pm 5^\circ\text{C}$ ). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Edmonton - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
TSS by Gravimetry	E160 Edmonton - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at $104 \pm 1^\circ\text{C}$ , with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Chloride in Water by IC	E235.Cl Edmonton - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Edmonton - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC	E235.NO2 Edmonton - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 Edmonton - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Edmonton - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 Edmonton - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ammonia by Fluorescence	E298  Edmonton - Environmental	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L  Edmonton - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L  Edmonton - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Sulfide by Colourimetry (Automated Flow)	E395  Vancouver - Environmental	Water	APHA 4500 -S E-Auto-Colorimetry	Sulfide is determined using the gas dialysis automated methylene blue colourimetric method. Results expressed "as H <sub>2</sub> S" if reported represent the maximum possible H <sub>2</sub> S concentration based on the total sulfide concentration in the sample. The H <sub>2</sub> S calculation converts Total Sulphide as (S <sub>2</sub> -) and reports it as Total Sulphide as (H <sub>2</sub> S)
Total Metals in Water by CRC ICPMS	E420  Edmonton - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Metals in Water by CRC ICPMS	E421  Edmonton - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAAS	E508  Edmonton - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509  Edmonton - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Oil and Grease by IR	E568  Edmonton - Environmental	Water	APHA 5520 C (mod)	A water sample is extracted using tetrachloroethylene solvent. Analysis is by infrared spectrophotometry.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
CCME PHC - F1 by Headspace GC-FID	E581.F1  Edmonton - Environmental	Water	CCME PHC in Soil - Tier 1	CCME Fraction 1 (F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
CCME PHCs - F2-F4 by GC-FID	E601  Edmonton - Environmental	Water	CCME PHC in Soil - Tier 1	Sample extracts are analyzed by GC-FID for CCME hydrocarbon fractions (F2-F4).
BTEX by Headspace GC-MS	E611A  Edmonton - Environmental	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
Dissolved Hardness (Calculated)	EC100  Edmonton - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101  Edmonton - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
TDS in Water (Calculation)	EC103  Edmonton - Environmental	Water	APHA 1030E (mod)	Total Dissolved Solids is calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N  Edmonton - Environmental	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).
F1-BTEX	EC580  Edmonton - Environmental	Water	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).
Sum F1 to F4 (C6-C50)	EC581  Edmonton - Environmental	Water	CCME PHC in Soil - Tier 1	Hydrocarbons, total (C6-C50) is the sum of CCME Fractions F1(C6-C10), F2(C10-C16), F3(C16-C34), and F4(C34-C50). F4G-sg is not used within this calculation due to overlap with other fractions.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Edmonton - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Preparation for Total Organic Carbon by Combustion	EP355  Edmonton - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Edmonton - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Dissolved Metals Water Filtration	EP421  Edmonton - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO <sub>3</sub> .
Dissolved Mercury Water Filtration	EP509  Edmonton - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
Oil & Grease Extraction for IR	EP568  Edmonton - Environmental	Water	APHA 5520 C (mod)	The entire water sample is extracted with tetrachloroethylene by liquid-liquid extraction.
VOCs Preparation for Headspace Analysis	EP581  Edmonton - Environmental	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
PHCs and PAHs Hexane Extraction	EP601  Edmonton - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.





## QUALITY CONTROL REPORT

Work Order : **EO2206499**

Page : 1 of 25

Amendment : **4**

Client : AECOM Canada Ltd.

Contact : Jessica Stepney

Address : 101 - 18817 Stony Plain Rd. NW  
Edmonton AB Canada T5S 0C2

Telephone : 780-486-5921

Project : 60662734

PO : 60662734

C-O-C number : ----

Sampler : RH

Site : ----

Quote number : EO2022-AECO100-012 Great Bear Lake

No. of samples received : 7

No. of samples analysed : 7

Laboratory : Edmonton - Environmental

Account Manager : Pamela Toledo

Address : 9450 - 17 Avenue NW  
Edmonton, Alberta Canada T6N 1M9

Telephone : +1 780 413 5227

Date Samples Received : 15-Aug-2022 10:14

Date Analysis Commenced : 15-Aug-2022

Issue Date : 19-Sep-2022 08:49

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Alex Drake	Lab Analyst	Edmonton Inorganics, Edmonton, Alberta
Austin Wasylyshyn	Lab Analyst	Edmonton Metals, Edmonton, Alberta
Brianna Allen	Production/Validation Manager	Vancouver Inorganics, Burnaby, British Columbia
Dan Nguyen	Team Leader - Inorganics	Edmonton Metals, Edmonton, Alberta
Daniel Nguyen	Lab Assistant	Edmonton Inorganics, Edmonton, Alberta
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Jennifer Lupuliak	Lab Assistant	Edmonton Metals, Edmonton, Alberta
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Ryan Huynh	Lab Assistant	Edmonton Inorganics, Edmonton, Alberta
Samantha Mayor	Lab Assistant	Edmonton Metals, Edmonton, Alberta
Shruti Mudliar	Lab Analyst	Edmonton Inorganics, Edmonton, Alberta
Yan Zhang	Lab Analyst	Edmonton Organics, Edmonton, Alberta



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## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

# = Indicates a QC result that did not meet the ALS DQO.

## Workorder Comments

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Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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## Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 602958)</b>											
EO2206490-009	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 603207)</b>											
FC2201885-006	Anonymous	pH	----	E108	0.10	pH units	7.85	7.89	0.508%	3%	----
<b>Physical Tests (QC Lot: 603208)</b>											
FC2201885-006	Anonymous	conductivity	----	E100	2.0	µS/cm	2770	2730	1.45%	10%	----
<b>Physical Tests (QC Lot: 603209)</b>											
FC2201885-006	Anonymous	alkalinity, total (as CaCO <sub>3</sub> )	----	E290	2.0	mg/L	690	667	3.33%	20%	----
<b>Physical Tests (QC Lot: 623631)</b>											
EO2206499-001	GBL-2022-00001-001	turbidity	----	E121	0.10	NTU	0.24	0.24	0.006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 603090)</b>											
EO2206499-006	GBL-2022-00001-016	chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 603091)</b>											
EO2206499-006	GBL-2022-00001-016	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 603092)</b>											
EO2206499-006	GBL-2022-00001-016	nitrate (as N)	14797-55-8	E235.NO <sub>3</sub>	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 603093)</b>											
EO2206499-006	GBL-2022-00001-016	sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO <sub>4</sub>	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 603094)</b>											
EO2206499-006	GBL-2022-00001-016	nitrite (as N)	14797-65-0	E235.NO <sub>2</sub>	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 625002)</b>											
FC2202013-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0500	mg/L	0.0786	0.0789	0.0003	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 606693)</b>											
EO2206487-013	Anonymous	carbon, total organic [TOC]	----	E355-L	1.00	mg/L	112	117	4.67%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 608646)</b>											
EO2206489-008	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	30.0	31.6	5.07%	20%	----
<b>Organic / Inorganic Carbon (QC Lot: 611700)</b>											
EO2206487-010	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	11.4	12.3	7.51%	20%	----
<b>Total Metals (QC Lot: 607762)</b>											
EO2206483-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0043	0.0032	0.0011	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00063	0.00063	0.000003	Diff <2x LOR	----



Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 607762) - continued</b>											
EO2206483-001	Anonymous	barium, total	7440-39-3	E420	0.00010	mg/L	0.0276	0.0286	3.64%	20%	----
		beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.014	0.015	0.0005	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000109	0.0000057	0.0000052	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	23.5	23.3	0.840%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	1.29	1.29	0.403%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0054	0.0051	0.0003	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	10.7	10.9	1.57%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0715	0.0716	0.0328%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.267	0.257	0.010	Diff <2x LOR	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000101	0.000072	0.000030	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	6.16	6.14	0.302%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.050	mg/L	2.08	2.20	5.50%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0530	0.0542	2.17%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000015	<0.000010	0.000005	Diff <2x LOR	----
		thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----





Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 607762) - continued											
EO2206483-001	Anonymous	zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Total Metals (QC Lot: 627190)											
EO2206499-001	GBL-2022-00001-001	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 652158)											
EO2207734-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 605043)											
EO2206489-006	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00050	mg/L	0.00055	0.00056	0.00001	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00050	mg/L	0.0126	0.0138	9.03%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.050	mg/L	0.299	0.368	0.068	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.250	mg/L	118	130	9.54%	20%	----
		cesium, dissolved	7440-46-2	E421	0.000050	mg/L	0.000091	0.000094	0.000004	Diff <2x LOR	----
		chromium, dissolved	7440-47-3	E421	0.00250	mg/L	<0.00250	<0.00250	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.00050	mg/L	0.00122	0.00128	0.00006	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00100	mg/L	0.00302	0.00383	0.00080	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.150	mg/L	<0.150	<0.150	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0050	mg/L	0.454	0.403	12.0%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0250	mg/L	16.6	15.9	3.86%	20%	----
		manganese, dissolved	7439-96-5	E421	0.0250	mg/L	0.136	0.143	0.00637	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000250	mg/L	0.00714	0.00788	9.75%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00250	mg/L	<0.00250	0.00386	0.00136	Diff <2x LOR	----
		phosphorus, dissolved	7723-14-0	E421	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.250	mg/L	8.50	8.80	3.52%	20%	----
		rubidium, dissolved	7440-17-7	E421	0.00100	mg/L	0.0100	0.0107	6.34%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000250	mg/L	0.00220	0.00194	0.000252	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.250	mg/L	2.97	2.89	2.70%	20%	----
		silver, dissolved	7440-22-4	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.250	mg/L	1750	1940	10.2%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00100	mg/L	3.01	3.25	7.95%	20%	----
		sulfur, dissolved	7704-34-9	E421	2.50	mg/L	1110	1200	7.44%	20%	----
		tellurium, dissolved	13494-80-9	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Dissolved Metals (QC Lot: 605043) - continued											
EO2206489-006	Anonymous	thallium, dissolved	7440-28-0	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		thorium, dissolved	7440-29-1	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00150	mg/L	<0.00150	<0.00150	0	Diff <2x LOR	----
		tungsten, dissolved	7440-33-7	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000050	mg/L	0.00937	0.00884	5.89%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00250	mg/L	<0.00250	<0.00250	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		zirconium, dissolved	7440-67-7	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 605105)											
EO2206499-007	GBL-2022-00001-030	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	0.000071	<0.000050	0.000021	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	0.0000051	0.0000001	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----



Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Dissolved Metals (QC Lot: 605105) - continued											
EO2206499-007	GBL-2022-00001-030	silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.050	mg/L	0.068	<0.050	0.018	Diff <2x LOR	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000019	<0.000010	0.000009	Diff <2x LOR	----
		thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 612056)											
EO2206487-015	Anonymous	calcium, dissolved	7440-70-2	E421	0.250	mg/L	138	148	7.21%	20%	----
Dissolved Metals (QC Lot: 646330)											
EO2206499-001	GBL-2022-00001-001	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 648043)											
EO2207597-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 604495)											
EO2206488-001	Anonymous	benzene	71-43-2	E611A	0.50	µg/L	1.16 mg/L	1050	10.2%	30%	----
		ethylbenzene	100-41-4	E611A	0.50	µg/L	0.0121 mg/L	11.8	2.70%	30%	----
		toluene	108-88-3	E611A	0.50	µg/L	0.00410 mg/L	4.08	0.680%	30%	----
		xylene, m+p-	179601-23-1	E611A	0.40	µg/L	0.00446 mg/L	4.34	2.60%	30%	----
		xylene, o-	95-47-6	E611A	0.30	µg/L	0.00142 mg/L	1.36	0.06	Diff <2x LOR	----
Hydrocarbons (QC Lot: 604496)											
EO2206488-001	Anonymous	F1 (C6-C10)	----	E581.F1	100	µg/L	1.42 mg/L	1340	5.84%	30%	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 602958)</b>						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
<b>Physical Tests (QCLot: 603208)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 603209)</b>						
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 623631)</b>						
turbidity	----	E121	0.1	NTU	<0.10	----
<b>Anions and Nutrients (QCLot: 603090)</b>						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
<b>Anions and Nutrients (QCLot: 603091)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 603092)</b>						
nitrate (as N)	14797-55-8	E235.NO <sub>3</sub>	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 603093)</b>						
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO <sub>4</sub>	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 603094)</b>						
nitrite (as N)	14797-65-0	E235.NO <sub>2</sub>	0.01	mg/L	<0.010	----
<b>Anions and Nutrients (QCLot: 625002)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Organic / Inorganic Carbon (QCLot: 606693)</b>						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 608646)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 611700)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Total Sulfides (QCLot: 643193)</b>						
sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	----
<b>Total Metals (QCLot: 607762)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 607762) - continued</b>						
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
<b>Total Metals (QCLot: 627190)</b>						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 652158)</b>						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 605043)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 605043) - continued</b>						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----
<b>Dissolved Metals (QCLot: 605105)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 605105) - continued</b>						
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----
<b>Dissolved Metals (QCLot: 612056)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 612056) - continued</b>						
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----
<b>Dissolved Metals (QCLot: 646330)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 648043)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Aggregate Organics (QCLot: 604859)</b>						
oil & grease (FTIR)	----	E568	1	mg/L	<1.0	----
<b>Volatile Organic Compounds (QCLot: 604495)</b>						
benzene	71-43-2	E611A	0.5	µg/L	<0.50	----
BTEX, total	----	E611A	1	µg/L	<1.0	----
ethylbenzene	100-41-4	E611A	0.5	µg/L	<0.50	----
toluene	108-88-3	E611A	0.5	µg/L	<0.50	----
xylene, m+p-	179601-23-1	E611A	0.4	µg/L	<0.40	----
xylene, o-	95-47-6	E611A	0.3	µg/L	<0.30	----
<b>Hydrocarbons (QCLot: 604496)</b>						
F1 (C6-C10)	----	E581.F1	100	µg/L	<100	----
<b>Hydrocarbons (QCLot: 606731)</b>						
F2 (C10-C16)	----	E601	100	µg/L	<100	----
F3 (C16-C34)	----	E601	250	µg/L	<250	----
F4 (C34-C50)	----	E601	250	µg/L	<250	----

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

Sub-Matrix: Water					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLOT: 602958)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	93.2	85.0	115	----
Physical Tests (QCLOT: 603207)									
pH	----	E108	----	pH units	6 pH units	101	97.0	103	----
Physical Tests (QCLOT: 603208)									
conductivity	----	E100	1	µS/cm	1412 µS/cm	91.5	90.0	110	----
Physical Tests (QCLOT: 603209)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	112	85.0	115	----
Physical Tests (QCLOT: 623631)									
turbidity	----	E121	0.1	NTU	200 NTU	97.4	85.0	115	----
Anions and Nutrients (QCLOT: 603090)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	98.6	90.0	110	----
Anions and Nutrients (QCLOT: 603091)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	96.6	90.0	110	----
Anions and Nutrients (QCLOT: 603092)									
nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	97.5	90.0	110	----
Anions and Nutrients (QCLOT: 603093)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	99.7	90.0	110	----
Anions and Nutrients (QCLOT: 603094)									
nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	96.6	90.0	110	----
Anions and Nutrients (QCLOT: 625002)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	110	85.0	115	----
Organic / Inorganic Carbon (QCLOT: 606693)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	93.3	80.0	120	----
Organic / Inorganic Carbon (QCLOT: 608646)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	91.5	80.0	120	----
Organic / Inorganic Carbon (QCLOT: 611700)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	89.4	80.0	120	----
Total Sulfides (QCLOT: 643193)									
sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	0.08 mg/L	89.4	80.0	120	----
Total Metals (QCLOT: 607762)									



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 607762) - continued									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	103	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	98.2	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	107	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	95.6	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	108	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	103	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	105	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	103	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	112	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	99.7	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	109	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	105	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	107	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	109	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	98.8	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	98.5	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	97.5	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	96.8	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	103	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	93.3	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	98.2	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	105	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	103	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	108	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	107	80.0	120	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 607762) - continued									
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	92.3	80.0	120	----
Total Metals (QCLot: 627190)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	100	80.0	120	----
Total Metals (QCLot: 652158)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	99.4	80.0	120	----
Dissolved Metals (QCLot: 605043)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	104	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	99.8	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.1	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	109	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	90.4	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	101	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	103	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	96.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	106	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	99.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	110	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	104	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.4	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	96.6	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	95.6	80.0	120	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	104	80.0	120	----





Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 605043) - continued									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	92.1	80.0	120	----
tin, dissolved	7440-31-5	E421	----	mg/L	0.5 mg/L	100	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	103	80.0	120	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	106	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	104	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.2	80.0	120	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	99.9	80.0	120	----
Dissolved Metals (QCLot: 605105)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	106	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	108	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	108	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.6	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.8	80.0	120	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	103	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	105	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	108	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	106	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	110	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.7	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	111	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	106	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	107	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	96.4	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	107	80.0	120	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 605105) - continued									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	102	80.0	120	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	104	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	107	80.0	120	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	106	80.0	120	----
tin, dissolved	7440-31-5	E421	----	mg/L	0.5 mg/L	102	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	108	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	111	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	103	80.0	120	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	98.3	80.0	120	----
Dissolved Metals (QCLot: 612056)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	96.3	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	93.0	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	96.2	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	95.8	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	94.1	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	93.8	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	107	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	96.1	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	95.2	80.0	120	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	92.4	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	98.2	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.8	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.6	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	88.0	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	94.4	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.6	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	94.2	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	95.9	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	94.1	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	94.6	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	99.0	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	96.5	80.0	120	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	94.8	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.0	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 612056) - continued</b>									
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	89.1	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	96.3	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	92.1	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	99.0	80.0	120	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	97.3	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	94.0	80.0	120	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	91.9	80.0	120	----
tin, dissolved	7440-31-5	E421	----	mg/L	0.5 mg/L	94.9	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.4	80.0	120	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	94.7	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	90.7	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	96.1	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	85.5	80.0	120	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	88.3	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	101	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	100	80.0	120	----
<b>Aggregate Organics (QCLot: 604859)</b>									
oil & grease (FTIR)	----	E568	1	mg/L	10 mg/L	93.9	70.0	130	----
<b>Volatile Organic Compounds (QCLot: 604495)</b>									
benzene	71-43-2	E611A	0.5	µg/L	100 µg/L	99.4	70.0	130	----
ethylbenzene	100-41-4	E611A	0.5	µg/L	100 µg/L	95.0	70.0	130	----
toluene	108-88-3	E611A	0.5	µg/L	100 µg/L	86.5	70.0	130	----
xylene, m+p-	179601-23-1	E611A	0.4	µg/L	200 µg/L	109	70.0	130	----
xylene, o-	95-47-6	E611A	0.3	µg/L	100 µg/L	96.6	70.0	130	----
<b>Hydrocarbons (QCLot: 604496)</b>									
F1 (C6-C10)	----	E581.F1	100	µg/L	2750 µg/L	84.4	70.0	130	----
<b>Hydrocarbons (QCLot: 606731)</b>									
F2 (C10-C16)	----	E601	100	µg/L	3260 µg/L	116	70.0	130	----
F3 (C16-C34)	----	E601	250	µg/L	6340 µg/L	110	70.0	130	----
F4 (C34-C50)	----	E601	250	µg/L	4970 µg/L	113	70.0	130	----

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Matrix Spike (MS) Report					
Spike		Recovery (%)	Recovery Limits (%)		
Concentration	Target	MS	Low	High	Qualifier
96.6 mg/L	100 mg/L	96.6	75.0	125	----
1.00 mg/L	1 mg/L	100	75.0	125	----
2.37 mg/L	2.5 mg/L	95.0	75.0	125	----
96.2 mg/L	100 mg/L	96.2	75.0	125	----
0.485 mg/L	0.5 mg/L	97.1	75.0	125	----
0.0991 mg/L	0.1 mg/L	99.1	75.0	125	----
ND mg/L	5 mg/L	ND	70.0	130	----
ND mg/L	5 mg/L	ND	70.0	130	----
ND mg/L	5 mg/L	ND	70.0	130	----
0.173 mg/L	0.2 mg/L	86.6	70.0	130	----
0.0173 mg/L	0.02 mg/L	86.4	70.0	130	----
0.0189 mg/L	0.02 mg/L	94.6	70.0	130	----
ND mg/L	0.02 mg/L	ND	70.0	130	----
0.0423 mg/L	0.04 mg/L	106	70.0	130	----
0.00863 mg/L	0.01 mg/L	86.3	70.0	130	----
ND mg/L	0.1 mg/L	ND	70.0	130	----
0.00393 mg/L	0.004 mg/L	98.2	70.0	130	----
ND mg/L	4 mg/L	ND	70.0	130	----
0.00918 mg/L	0.01 mg/L	91.8	70.0	130	----
0.0364 mg/L	0.04 mg/L	91.1	70.0	130	----





Sub-Matrix: Water					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	
Total Metals (QCLot: 607762) - continued										
EO2206487-008	Anonymous	cobalt, total	7440-48-4	E420	0.0174 mg/L	0.02 mg/L	87.2	70.0	130	----
		copper, total	7440-50-8	E420	0.0174 mg/L	0.02 mg/L	86.8	70.0	130	----
		iron, total	7439-89-6	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		lead, total	7439-92-1	E420	0.0174 mg/L	0.02 mg/L	86.8	70.0	130	----
		lithium, total	7439-93-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0183 mg/L	0.02 mg/L	91.7	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		phosphorus, total	7723-14-0	E420	9.75 mg/L	10 mg/L	97.5	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		rubidium, total	7440-17-7	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0362 mg/L	0.04 mg/L	90.6	70.0	130	----
		silicon, total	7440-21-3	E420	ND mg/L	10 mg/L	ND	70.0	130	----
		silver, total	7440-22-4	E420	0.00393 mg/L	0.004 mg/L	98.2	70.0	130	----
		sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	20.3 mg/L	20 mg/L	102	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0317 mg/L	0.04 mg/L	79.2	70.0	130	----
		thallium, total	7440-28-0	E420	0.00350 mg/L	0.004 mg/L	87.4	70.0	130	----
		thorium, total	7440-29-1	E420	0.0182 mg/L	0.02 mg/L	90.9	70.0	130	----
		tin, total	7440-31-5	E420	0.0172 mg/L	0.02 mg/L	86.1	70.0	130	----
		titanium, total	7440-32-6	E420	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0184 mg/L	0.02 mg/L	92.0	70.0	130	----
		uranium, total	7440-61-1	E420	0.00370 mg/L	0.004 mg/L	92.6	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0949 mg/L	0.1 mg/L	94.9	70.0	130	----
		zinc, total	7440-66-6	E420	0.355 mg/L	0.4 mg/L	88.7	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0388 mg/L	0.04 mg/L	96.9	70.0	130	----
Total Metals (QCLot: 627190)										
EO2206499-002	GBL-2022-00001-002	mercury, total	7439-97-6	E508	0.000106 mg/L	0.0001 mg/L	106	70.0	130	----
Total Metals (QCLot: 652158)										
EO2207734-002	Anonymous	mercury, total	7439-97-6	E508	0.0000964 mg/L	0.0001 mg/L	96.4	70.0	130	----
Dissolved Metals (QCLot: 605043)										
EO2206482-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.205 mg/L	0.2 mg/L	102	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0222 mg/L	0.02 mg/L	111	70.0	130	----



Sub-Matrix: Water					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 605043) - continued										
EO2206482-001	Anonymous	barium, dissolved	7440-39-3	E421	0.0182 mg/L	0.02 mg/L	91.0	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0450 mg/L	0.04 mg/L	112	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00958 mg/L	0.01 mg/L	95.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00389 mg/L	0.004 mg/L	97.3	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cesium, dissolved	7440-46-2	E421	0.0100 mg/L	0.01 mg/L	100	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0184 mg/L	0.02 mg/L	92.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.116 mg/L	0.1 mg/L	116	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		rubidium, dissolved	7440-17-7	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0536 mg/L	0.04 mg/L	134	70.0	130	MES
		silicon, dissolved	7440-21-3	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00305 mg/L	0.004 mg/L	76.3	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		tellurium, dissolved	13494-80-9	E421	0.0445 mg/L	0.04 mg/L	111	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00383 mg/L	0.004 mg/L	95.7	70.0	130	----
		thorium, dissolved	7440-29-1	E421	0.0198 mg/L	0.02 mg/L	98.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0423 mg/L	0.04 mg/L	106	70.0	130	----
		tungsten, dissolved	7440-33-7	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00404 mg/L	0.004 mg/L	101	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.338 mg/L	0.4 mg/L	84.4	70.0	130	----
		zirconium, dissolved	7440-67-7	E421	0.0416 mg/L	0.04 mg/L	104	70.0	130	----



Sub-Matrix: Water					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 605105)										
EO2206508-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.203 mg/L	0.2 mg/L	102	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0166 mg/L	0.02 mg/L	82.8	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0185 mg/L	0.02 mg/L	92.3	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0214 mg/L	0.02 mg/L	107	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0375 mg/L	0.04 mg/L	93.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00870 mg/L	0.01 mg/L	87.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.084 mg/L	0.1 mg/L	84.3	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		calcium, dissolved	7440-70-2	E421	3.11 mg/L	4 mg/L	77.7	70.0	130	----
		cesium, dissolved	7440-46-2	E421	0.00952 mg/L	0.01 mg/L	95.2	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0395 mg/L	0.04 mg/L	98.8	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0198 mg/L	0.02 mg/L	98.9	70.0	130	----
		copper, dissolved	7440-50-8	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, dissolved	7439-89-6	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		lead, dissolved	7439-92-1	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0928 mg/L	0.1 mg/L	92.8	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	0.980 mg/L	1 mg/L	98.0	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	10.6 mg/L	10 mg/L	106	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.06 mg/L	4 mg/L	101	70.0	130	----
		rubidium, dissolved	7440-17-7	E421	0.0183 mg/L	0.02 mg/L	91.4	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0370 mg/L	0.04 mg/L	92.5	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.09 mg/L	10 mg/L	90.9	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.0188 mg/L	0.02 mg/L	93.8	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		tellurium, dissolved	13494-80-9	E421	0.0338 mg/L	0.04 mg/L	84.6	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00400 mg/L	0.004 mg/L	100	70.0	130	----
		thorium, dissolved	7440-29-1	E421	0.0184 mg/L	0.02 mg/L	91.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0181 mg/L	0.02 mg/L	90.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0393 mg/L	0.04 mg/L	98.3	70.0	130	----
		tungsten, dissolved	7440-33-7	E421	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00405 mg/L	0.004 mg/L	101	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0946 mg/L	0.1 mg/L	94.6	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.388 mg/L	0.4 mg/L	97.1	70.0	130	----



Sub-Matrix: Water					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 605105) - continued										
EO2206508-001	Anonymous	zirconium, dissolved	7440-67-7	E421	0.0330 mg/L	0.04 mg/L	82.6	70.0	130	----
Dissolved Metals (QCLot: 612056)										
EO2206632-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.194 mg/L	0.2 mg/L	96.8	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0193 mg/L	0.02 mg/L	96.5	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0209 mg/L	0.02 mg/L	104	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00743 mg/L	0.01 mg/L	74.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00407 mg/L	0.004 mg/L	102	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cesium, dissolved	7440-46-2	E421	0.00934 mg/L	0.01 mg/L	93.4	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0398 mg/L	0.04 mg/L	99.5	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0191 mg/L	0.02 mg/L	95.4	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0188 mg/L	0.02 mg/L	93.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.79 mg/L	2 mg/L	89.3	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0177 mg/L	0.02 mg/L	88.6	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0977 mg/L	0.1 mg/L	97.7	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0192 mg/L	0.02 mg/L	95.8	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0376 mg/L	0.04 mg/L	94.1	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	10.0 mg/L	10 mg/L	100	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		rubidium, dissolved	7440-17-7	E421	0.0192 mg/L	0.02 mg/L	95.9	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0424 mg/L	0.04 mg/L	106	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.47 mg/L	10 mg/L	84.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00382 mg/L	0.004 mg/L	95.5	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		tellurium, dissolved	13494-80-9	E421	0.0373 mg/L	0.04 mg/L	93.2	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00364 mg/L	0.004 mg/L	91.0	70.0	130	----
		thorium, dissolved	7440-29-1	E421	0.0160 mg/L	0.02 mg/L	79.9	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0397 mg/L	0.04 mg/L	99.2	70.0	130	----





Sub-Matrix: Water					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 612056) - continued										
EO2206632-002	Anonymous	tungsten, dissolved	7440-33-7	E421	0.0187 mg/L	0.02 mg/L	93.3	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0999 mg/L	0.1 mg/L	99.9	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.347 mg/L	0.4 mg/L	86.8	70.0	130	----
		zirconium, dissolved	7440-67-7	E421	0.0381 mg/L	0.04 mg/L	95.3	70.0	130	----
Dissolved Metals (QCLot: 646330)										
EO2206499-002	GBL-2022-00001-002	mercury, dissolved	7439-97-6	E509	0.0000997 mg/L	0.0001 mg/L	99.7	70.0	130	----
Dissolved Metals (QCLot: 648043)										
EO2207597-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000985 mg/L	0.0001 mg/L	98.5	70.0	130	----
Volatile Organic Compounds (QCLot: 604495)										
EO2206488-002	Anonymous	benzene	71-43-2	E611A	ND µg/L	100 µg/L	ND	50.0	140	MS-B
		ethylbenzene	100-41-4	E611A	ND µg/L	100 µg/L	ND	50.0	140	MS-B
		toluene	108-88-3	E611A	89.5 µg/L	100 µg/L	89.5	50.0	140	----
		xylene, m+p-	179601-23-1	E611A	216 µg/L	200 µg/L	108	50.0	140	----
		xylene, o-	95-47-6	E611A	88.7 µg/L	100 µg/L	88.7	50.0	140	----

Qualifiers

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.



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**FED 2022 FRONT**

## CERTIFICATE OF ANALYSIS

**Work Order** : **YL2201188**  
**Client** : **AECOM Canada Ltd.**  
**Contact** : Jessica Stepney  
**Address** : 101 - 18817 Stony Plain Rd. NW  
                   Edmonton AB Canada T5S 0C2  
**Telephone** : 780-486-5921  
**Project** : ----  
**PO** : ----  
**C-O-C number** : ----  
**Sampler** : Rebecca Hurtubise  
**Site** : ----  
**Quote number** : EO2022-AECO100-012 Great Bear Lake  
**No. of samples received** : 17  
**No. of samples analysed** : 17

**Page** : 1 of 23  
**Laboratory** : Yellowknife - Environmental  
**Account Manager** : Pamela Toledo  
**Address** : 314 Old Airport Road, Unit 116  
                   Yellowknife NT Canada X1A 3T3  
**Telephone** : +1 867 873 5593  
**Date Samples Received** : 10-Aug-2022 16:00  
**Date Analysis Commenced** : 15-Aug-2022  
**Issue Date** : 28-Sep-2022 14:22

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Alex Thornton	Analyst	Metals, Burnaby, British Columbia
Austin Wasylyshyn	Lab Analyst	Metals, Edmonton, Alberta
Brandon Green	Lab Assistant	Metals, Edmonton, Alberta
Dan Nguyen	Team Leader - Inorganics	Metals, Edmonton, Alberta
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Joan Wu	Lab Analyst	Metals, Edmonton, Alberta
Kaitlyn Gardner	Account Manager Assistant	External Subcontracting, Saskatoon, Saskatchewan
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Paolo Obillo	Account Manager Assistant	External Subcontracting, Saskatoon, Saskatchewan
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
Bq/L	Becquerels per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Workorder Comments

Water samples for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

Sulfide analysis was conducted on unpreserved samples. This can cause significant negative biases in the reported results.

## Sample Comments

Sample	Client Id	Comment
YL2201188-004	GBL-2022-00001-008	Samples numbered 004 in this report were observed to have light, dark particulate that could not be representatively subsampled during analysis for total organic carbon (TOC). It is expected excluding the solids will add a potentially significant negative bias to the reported results





## Qualifiers

Qualifier	Description
RRV	Reported result verified by repeat analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID	GBL-2022-0000 1-005	GBL-2022-0000 1-006	GBL-2022-0000 1-007	GBL-2022-0000 1-008	GBL-2022-0000 1-009
(Matrix: Water)										
Client sampling date / time					08-Aug-2022 18:15	08-Aug-2022 18:52	08-Aug-2022 18:03	08-Aug-2022 19:00	08-Aug-2022 14:23	
Analyte	CAS Number	Method	LOR	Unit	YL2201188-001	YL2201188-002	YL2201188-003	YL2201188-004	YL2201188-005	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	2.0	mg/L	57.3	67.3	61.8	108	117	
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	2.0	mg/L	57.3	67.3	61.8	108	117	
conductivity	----	E100	1.0	µS/cm	119	161	157	488	221	
hardness (as CaCO <sub>3</sub> ), from total Ca/Mg	----	EC100A	0.50	mg/L	63.8	80.6	77.4	275	114	
pH	----	E108	0.10	pH units	7.87	7.97	8.04	7.33	8.11	
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L	85.4	99.8	97.9	380	146	
solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	3.0	4.0	599	<3.0	
turbidity	----	E121	0.10	NTU	0.59	1.29	0.34	195	1.00	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0104	<0.0050	0.0051	0.211	0.0196	
chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	2.45	2.64	1.40	<0.50	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.120	0.151	0.162	0.413	0.290	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	<0.0050	0.0241	0.0212	
nitrate + nitrite (as N)	----	EC235.N+N	0.0050	mg/L	<0.0051	<0.0051	<0.0051	0.0293	0.0212	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	0.0052	<0.0010	
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4-L	0.050	mg/L	6.65	15.9	16.6	155	7.22	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	16.3	5.35	4.63	36.8	12.6	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	16.7	5.20	4.51	142	18.0	
<b>Total Sulfides</b>										
sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	<0.0015	<0.0015	0.634	<0.0015	
sulfide, total (as H <sub>2</sub> S)	7783-06-4	E395	0.0016	mg/L	<0.0016	<0.0016	<0.0016	0.674	<0.0016	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0203	0.0429	0.0172	0.731	0.0083	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00015	<0.00010	<0.00010	0.00117	0.00055	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00620	0.00095	0.00024	0.531	0.0118	
barium, total	7440-39-3	E420	0.00010	mg/L	0.00639	0.0137	0.0125	0.0983	0.0294	
beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	0.000328	<0.000020	0.000074	0.000031	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-005	GBL-2022-0000 1-006	GBL-2022-0000 1-007	GBL-2022-0000 1-008	GBL-2022-0000 1-009
Client sampling date / time					08-Aug-2022 18:15	08-Aug-2022 18:52	08-Aug-2022 18:03	08-Aug-2022 19:00	08-Aug-2022 14:23	
Analyte	CAS Number	Method	LOR	Unit	YL2201188-001	YL2201188-002	YL2201188-003	YL2201188-004	YL2201188-005	
					Result	Result	Result	Result	Result	
Total Metals										
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	0.00276	0.000082	
boron, total	7440-42-8	E420.B-L	0.0020	mg/L	0.0058	0.0133	0.0076	0.0928	0.0331	
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000068	0.000319	<0.0000050	0.00143	0.0000221	
calcium, total	7440-70-2	E420	0.050	mg/L	18.7	19.6	18.4	84.8	29.3	
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	0.000097	0.000019	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00016	0.00047	0.00014	0.00204	0.00014	
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00013	0.00038	<0.00010	0.0742	0.00017	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00248	0.00201	0.00071	0.0391	0.00952	
iron, total	7439-89-6	E420	0.010	mg/L	0.043	0.069	0.015	11.7	0.078	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000274	0.000476	<0.000050	0.135	0.000098	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0011	0.0029	0.0012	0.0071	0.0026	
magnesium, total	7439-95-4	E420	0.0050	mg/L	4.16	7.68	7.64	15.3	9.87	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00533	0.00387	0.00107	1.48	0.0545	
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	0.0000978	<0.0000050	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000564	0.000298	0.000304	0.0184	0.000386	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00070	0.00070	<0.00050	0.0194	0.00115	
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	<0.050	2.49	<0.050	
potassium, total	7440-09-7	E420	0.050	mg/L	0.650	1.08	1.05	5.65	1.30	
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00155	0.00154	0.00139	0.00398	0.00151	
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000057	0.000419	<0.000050	0.000640	<0.000050	
silicon, total	7440-21-3	E420	0.10	mg/L	0.50	1.10	0.90	9.99	2.93	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	0.000638	0.000168	
sodium, total	7440-23-5	E420	0.050	mg/L	1.38	2.89	2.80	10.2	4.33	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0232	0.0629	0.0684	0.240	0.0761	
sulfur, total	7704-34-9	E420	0.50	mg/L	2.67	5.72	5.52	59.4	2.63	
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	0.000311	<0.000010	0.000029	0.000022	
thorium, total	7440-29-1	E420	0.00010	mg/L	0.00012	<0.00010	<0.00010	0.00024	<0.00010	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	0.00175	0.00071	0.0189	<0.00030	
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00065	<0.00010	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-005	GBL-2022-0000 1-006	GBL-2022-0000 1-007	GBL-2022-0000 1-008	GBL-2022-0000 1-009
Client sampling date / time						08-Aug-2022 18:15	08-Aug-2022 18:52	08-Aug-2022 18:03	08-Aug-2022 19:00	08-Aug-2022 14:23
Analyte	CAS Number	Method	LOR	Unit	YL2201188-001	YL2201188-002	YL2201188-003	YL2201188-004	YL2201188-005	YL2201188-005
					Result	Result	Result	Result	Result	Result
<b>Total Metals</b>										
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000141	0.000883	0.000349	0.00549	0.0450	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00061	0.00088	<0.00050	0.00693	<0.00050	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0030	<0.0030	<0.0030	1.19	<0.0030	
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	0.00057	<0.00020	
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0135	0.0024	0.0015	0.0053	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00016	<0.00010	<0.00010	0.00038	0.00057	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00614	0.00057	0.00022	0.0726	0.0116	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00688	0.0136	0.0146	0.0333	0.0287	
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421.B-L	0.0020	mg/L	0.0064	0.0136	0.0133	0.0654	0.0332	
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000086	0.0000051	0.0000088	0.0000095	<0.0000050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	19.2	19.5	20.4	72.0	30.0	
cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	0.000013	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00024	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00263	<0.00010	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00220	0.00124	0.00061	0.00056	0.00809	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.022	<0.010	<0.010	0.182	0.018	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000079	<0.000050	<0.000050	0.000290	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0010	0.0025	0.0027	0.0066	0.0028	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	5.02	8.89	9.28	14.3	11.4	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00040	0.00014	<0.00010	0.168	0.0100	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000486	0.000260	0.000226	0.0101	0.000397	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00080	<0.00050	<0.00050	0.00341	0.00106	
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	<0.050	0.085	<0.050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.773	1.25	1.37	5.24	1.54	
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00157	0.00161	0.00156	0.00255	0.00164	
selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000054	<0.000050	<0.000050	0.000145	<0.000050	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	0.477	1.04	0.921	7.40	3.05	



Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-005	GBL-2022-0000 1-006	GBL-2022-0000 1-007	GBL-2022-0000 1-008	GBL-2022-0000 1-009
Client sampling date / time					08-Aug-2022 18:15	08-Aug-2022 18:52	08-Aug-2022 18:03	08-Aug-2022 19:00	08-Aug-2022 14:23	
Analyte	CAS Number	Method	LOR	Unit	YL2201188-001	YL2201188-002	YL2201188-003	YL2201188-004	YL2201188-005	
					Result	Result	Result	Result	Result	
Dissolved Metals										
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	0.000023	
sodium, dissolved	7440-23-5	E421	0.050	mg/L	1.58	3.06	3.26	9.79	4.70	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0238	0.0641	0.0721	0.197	0.0721	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	2.40	5.39	5.67	52.2	2.65	
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	0.00044	<0.00030	
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000120	0.000440	0.000431	0.000486	0.0395	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	0.00064	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	0.0147	<0.0010	
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
dissolved mercury filtration location	----	EP509	-	-	Laboratory	Laboratory	Laboratory	Laboratory	Laboratory	
dissolved metals filtration location	----	EP421	-	-	Laboratory	Laboratory	Laboratory	Laboratory	Laboratory	
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611A	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
ethylbenzene	100-41-4	E611A	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
toluene	108-88-3	E611A	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
xylene, m+p-	179601-23-1	E611A	0.40	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	
xylene, o-	95-47-6	E611A	0.30	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30	
xylenes, total	1330-20-7	E611A	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
BTEX, total	----	E611A	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Hydrocarbons										
F1 (C6-C10)	----	E581.VH+F1	100	µg/L	<100	<100	<100	<100	<100	
F1-BTEX	----	EC580	25	µg/L	<100	<100	<100	<100	<100	
F2 (C10-C16)	----	E601	100	µg/L	<100	<100	<100	<100	<100	
F3 (C16-C34)	----	E601	250	µg/L	<250	<250	<250	<250	<250	
F4 (C34-C50)	----	E601	250	µg/L	<250	<250	<250	<250	<250	
Hydrocarbons Surrogates										



Analytical Results

Sub-Matrix: Water					Client sample ID	GBL-2022-0000 1-005	GBL-2022-0000 1-006	GBL-2022-0000 1-007	GBL-2022-0000 1-008	GBL-2022-0000 1-009
(Matrix: Water)					Client sampling date / time	08-Aug-2022 18:15	08-Aug-2022 18:52	08-Aug-2022 18:03	08-Aug-2022 19:00	08-Aug-2022 14:23
Analyte	CAS Number	Method	LOR	Unit	YL2201188-001	YL2201188-002	YL2201188-003	YL2201188-004	YL2201188-005	
					Result	Result	Result	Result	Result	Result
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	E601	1.0	%	91.9	93.7	97.2	94.0	92.4	
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	%	105	105	100	84.9	96.0	
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611A	1.0	%	79.8	77.7	77.3	74.4	76.5	
difluorobenzene, 1,4-	540-36-3	E611A	1.0	%	100	99.2	99.6	98.8	99.3	
Radiological Parameters										
lead-210	14255-04-0	Pb210	0.02	Bq/L	----	----	----	----	0.04	
radium-226	13982-63-3	Ra226	0.005	Bq/L	----	----	----	----	0.08	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-010	GBL-2022-0000 1-011	GBL-2022-0000 1-012	GBL-2022-0000 1-013	GBL-2022-0000 1-015
Client sampling date / time						08-Aug-2022 13:43	08-Aug-2022 15:10	08-Aug-2022 16:10	08-Aug-2022 13:30	08-Aug-2022 14:00
Analyte	CAS Number	Method	LOR	Unit	YL2201188-006	YL2201188-007	YL2201188-008	YL2201188-009	YL2201188-010	YL2201188-010
					Result	Result	Result	Result	Result	Result
<b>Physical Tests</b>										
alkalinity, bicarbonate (as CaCO <sub>3</sub> )	----	E290	2.0	mg/L	23.7	63.5	35.9	24.0	119	
alkalinity, carbonate (as CaCO <sub>3</sub> )	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, hydroxide (as CaCO <sub>3</sub> )	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, total (as CaCO <sub>3</sub> )	----	E290	2.0	mg/L	23.7	63.5	35.9	24.0	119	
conductivity	----	E100	1.0	µS/cm	46.1	158	72.7	45.6	223	
hardness (as CaCO <sub>3</sub> ), from total Ca/Mg	----	EC100A	0.50	mg/L	21.0	76.4	35.2	21.2	117	
pH	----	E108	0.10	pH units	7.53	8.03	7.70	7.54	8.11	
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L	28.0	97.0	51.4	28.6	146	
solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0	
turbidity	----	E121	0.10	NTU	0.21	0.45	0.58	0.16	0.67	
<b>Anions and Nutrients</b>										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0092	0.0060	0.0354	0.0176	0.0177	
chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	2.66	0.52	<0.50	<0.50	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.102	0.157	0.132	0.103	0.288	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0449	<0.0050	0.0050	0.0378	0.0063	
nitrate + nitrite (as N)	----	EC235.N+N	0.0050	mg/L	0.0449	<0.0051	<0.0051	0.0378	0.0063	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4-L	0.050	mg/L	1.15	16.7	2.17	1.12	7.21	
<b>Organic / Inorganic Carbon</b>										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.36	4.76	8.33	2.37	10.6	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.18	4.99	8.63	2.46	10.8	
<b>Total Sulfides</b>										
sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	
sulfide, total (as H <sub>2</sub> S)	7783-06-4	E395	0.0016	mg/L	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	
<b>Total Metals</b>										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	0.0130	0.0098	<0.0030	0.0052	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00061	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00026	0.00030	0.00084	0.00023	0.0124	
barium, total	7440-39-3	E420	0.00010	mg/L	0.00392	0.0124	0.00523	0.00377	0.0297	
beryllium, total	7440-41-7	E420	0.000020	mg/L	0.000038	<0.000020	0.000020	<0.000020	0.000070	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-010	GBL-2022-0000 1-011	GBL-2022-0000 1-012	GBL-2022-0000 1-013	GBL-2022-0000 1-015
Client sampling date / time						08-Aug-2022 13:43	08-Aug-2022 15:10	08-Aug-2022 16:10	08-Aug-2022 13:30	08-Aug-2022 14:00
Analyte	CAS Number	Method	LOR	Unit		YL2201188-006	YL2201188-007	YL2201188-008	YL2201188-009	YL2201188-010
						Result	Result	Result	Result	Result
<b>Total Metals</b>										
boron, total	7440-42-8	E420.B-L	0.0020	mg/L		0.0058	0.0136	0.0104	0.0053	0.0368
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000216	0.0000177	0.0000120	0.0000060	0.0000645
calcium, total	7440-70-2	E420	0.050	mg/L		5.06	18.2	9.65	5.18	29.4
cesium, total	7440-46-2	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	0.000014
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		<0.00010	0.00014	0.00016	<0.00010	0.00019
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	0.00020
copper, total	7440-50-8	E420	0.00050	mg/L		0.00066	0.00073	0.00130	0.00056	0.00996
iron, total	7439-89-6	E420	0.010	mg/L		<0.010	0.012	0.014	<0.010	0.066
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	0.000068
lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	0.0024	<0.0010	<0.0010	0.0030
magnesium, total	7439-95-4	E420	0.0050	mg/L		2.03	7.52	2.70	2.00	10.6
manganese, total	7439-96-5	E420	0.00010	mg/L		0.00076	0.00114	0.00081	0.00070	0.0600
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000056
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000172	0.000270	0.000232	0.000165	0.000386
nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	0.00125
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, total	7440-09-7	E420	0.050	mg/L		0.498	1.08	0.744	0.482	1.41
rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00066	0.00145	0.00134	0.00058	0.00160
selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	0.000059	<0.000050	<0.000050	0.000102
silicon, total	7440-21-3	E420	0.10	mg/L		0.34	0.91	0.92	0.34	2.96
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	0.000073
sodium, total	7440-23-5	E420	0.050	mg/L		0.958	2.88	1.73	0.931	4.57
strontium, total	7440-24-6	E420	0.00020	mg/L		0.0113	0.0672	0.0209	0.0113	0.0748
sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	5.95	0.74	<0.50	2.63
tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000025	0.000019	0.000015	<0.000010	0.000062
thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	0.00055	<0.00030	<0.00030	<0.00030
tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000230	0.000607	0.000180	0.000170	0.0467





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-010	GBL-2022-0000 1-011	GBL-2022-0000 1-012	GBL-2022-0000 1-013	GBL-2022-0000 1-015
Client sampling date / time						08-Aug-2022 13:43	08-Aug-2022 15:10	08-Aug-2022 16:10	08-Aug-2022 13:30	08-Aug-2022 14:00
Analyte	CAS Number	Method	LOR	Unit	YL2201188-006	YL2201188-007	YL2201188-008	YL2201188-009	YL2201188-010	
					Result	Result	Result	Result	Result	
<b>Total Metals</b>										
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0031	0.0065	0.0072	<0.0030	<0.0030	<0.0030
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	<0.0010
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00057
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00016	0.00019	0.00075	0.00016	0.00016	0.0116
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00426	0.0142	0.00624	0.00438	0.00438	0.0277
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421.B-L	0.0020	mg/L	0.0062	----	0.0112	----	----	0.0335
boron, dissolved	7440-42-8	E421	0.010	mg/L	----	0.014	----	<0.010	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000061	0.0000051	0.0000104	0.0000065	0.0000065	<0.0000050
calcium, dissolved	7440-70-2	E421	0.050	mg/L	4.89	18.5	9.46	4.98	4.98	29.9
cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000014
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	<0.00010	----	----	<0.00010
chromium, dissolved	7440-47-3	E421	0.00050	mg/L	----	<0.00050	----	<0.00050	<0.00050	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00050	0.00058	0.00109	0.00047	0.00047	0.00806
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.016
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	0.0028	0.0012	<0.0010	<0.0010	0.0026
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	2.46	9.10	3.58	2.70	2.70	11.7
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00012	<0.00010	0.00012	0.00011	0.00011	0.00991
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000235	0.000353	0.000294	0.000219	0.000219	0.000484
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00111
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.600	1.32	0.952	0.646	0.646	1.51
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00068	0.00145	0.00172	0.00076	0.00076	0.00166
selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-010	GBL-2022-0000 1-011	GBL-2022-0000 1-012	GBL-2022-0000 1-013	GBL-2022-0000 1-015
Client sampling date / time						08-Aug-2022 13:43	08-Aug-2022 15:10	08-Aug-2022 16:10	08-Aug-2022 13:30	08-Aug-2022 14:00
Analyte	CAS Number	Method	LOR	Unit	YL2201188-006	YL2201188-007	YL2201188-008	YL2201188-009	YL2201188-010	
					Result	Result	Result	Result	Result	
<b>Dissolved Metals</b>										
silicon, dissolved	7440-21-3	E421	0.050	mg/L	0.330	0.913	0.930	0.346	3.07	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	0.000022	
sodium, dissolved	7440-23-5	E421	0.050	mg/L	1.11	3.22	2.11	1.19	4.71	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0109	0.0658	0.0212	0.0108	0.0735	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	5.81	0.81	<0.50	2.64	
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000160	0.000435	0.000148	0.000111	0.0382	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
dissolved mercury filtration location	----	EP509	-	-	Laboratory	Laboratory	Laboratory	Laboratory	Laboratory	
dissolved metals filtration location	----	EP421	-	-	Laboratory	Laboratory	Laboratory	Laboratory	Laboratory	
<b>Volatile Organic Compounds [Fuels]</b>										
benzene	71-43-2	E611A	0.50	µg/L	<0.50	----	----	----	<0.50	
ethylbenzene	100-41-4	E611A	0.50	µg/L	<0.50	----	----	----	<0.50	
toluene	108-88-3	E611A	0.50	µg/L	<0.50	----	----	----	<0.50	
xylene, m+p-	179601-23-1	E611A	0.40	µg/L	<0.40	----	----	----	<0.40	
xylene, o-	95-47-6	E611A	0.30	µg/L	<0.30	----	----	----	<0.30	
xylenes, total	1330-20-7	E611A	0.50	µg/L	<0.50	----	----	----	<0.50	
BTEX, total	----	E611A	1.0	µg/L	<1.0	----	----	----	<1.0	
<b>Hydrocarbons</b>										
F1 (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----	----	----	<100	
F1-BTEX	----	EC580	25	µg/L	<100	----	----	----	<100	
F2 (C10-C16)	----	E601	100	µg/L	<100	----	----	----	<100	
F3 (C16-C34)	----	E601	250	µg/L	<250	----	----	----	<250	
F4 (C34-C50)	----	E601	250	µg/L	<250	----	----	----	<250	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-010	GBL-2022-0000 1-011	GBL-2022-0000 1-012	GBL-2022-0000 1-013	GBL-2022-0000 1-015
Client sampling date / time						08-Aug-2022 13:43	08-Aug-2022 15:10	08-Aug-2022 16:10	08-Aug-2022 13:30	08-Aug-2022 14:00
Analyte	CAS Number	Method	LOR	Unit		YL2201188-006	YL2201188-007	YL2201188-008	YL2201188-009	YL2201188-010
						Result	Result	Result	Result	Result
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	E601	1.0	%		96.5	----	----	----	84.7
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	%		81.0	----	----	----	104
<b>Volatile Organic Compounds Surrogates</b>										
bromofluorobenzene, 4-	460-00-4	E611A	1.0	%		75.9	----	----	----	81.0
difluorobenzene, 1,4-	540-36-3	E611A	1.0	%		98.1	----	----	----	98.8
<b>Radiological Parameters</b>										
lead-210	14255-04-0	Pb210	0.02	Bq/L		0.02	----	----	----	0.07
lead-210	14255-04-0	Pb210	0.037	Bq/L		----	----	----	see attached	----
radium-226	13982-63-3	Ra226	-	Bq/L		----	----	----	see attached	----
radium-226	13982-63-3	Ra226	0.005	Bq/L		<0.005	----	----	----	0.09

Please refer to the General Comments section for an explanation of any qualifiers detected.



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-017	GBL-2022-0000 1-018 (Travel Blank)	GBL-2022-0000 1-022	GBL-2022-0000 1-023	GBL-2022-0000 1-024
Client sampling date / time					08-Aug-2022 14:30	08-Aug-2022	08-Aug-2022 15:42	08-Aug-2022 15:35	08-Aug-2022 15:50	
Analyte	CAS Number	Method	LOR	Unit	YL2201188-011	YL2201188-012	YL2201188-013	YL2201188-014	YL2201188-015	
					Result	Result	Result	Result	Result	
Physical Tests										
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	41.5	41.0	41.4	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	41.5	41.0	41.4	
conductivity	----	E100	1.0	µS/cm	1.1	1.3	107	112	106	
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.50	mg/L	<0.50	<0.50	50.3	51.0	51.0	
pH	----	E108	0.10	pH units	5.67	5.59	7.73	7.76	7.76	
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L	<1.0	<1.0	68.8	70.2	68.0	
solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	3.2	<3.0	<3.0	
turbidity	----	E121	0.10	NTU	<0.10	<0.10	1.40	0.62	0.75	
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0113 <sup>RRV</sup>	0.0107	0.0079	0.0132	
chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0.261	0.256	0.258	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	
nitrate + nitrite (as N)	----	EC235.N+N	0.0050	mg/L	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
sulfate (as SO4)	14808-79-8	E235.SO4-L	0.050	mg/L	<0.050	<0.050	13.0	13.9	12.3	
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	6.80	7.14	7.35	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	6.96	7.15	7.26	
Total Sulfides										
sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	
sulfide, total (as H2S)	7783-06-4	E395	0.0016	mg/L	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0.0302	0.0150	0.0135	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0.00058	0.00052	0.00052	
barium, total	7440-39-3	E420	0.00010	mg/L	<0.00010	<0.00010	0.00748	0.00694	0.00689	
beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	<0.000020	0.000036	<0.000020	





Analytical Results

Sub-Matrix: Water  
(Matrix: Water)

Client sample ID

					GBL-2022-0000 1-017	GBL-2022-0000 1-018 (Travel Blank)	GBL-2022-0000 1-022	GBL-2022-0000 1-023	GBL-2022-0000 1-024
Client sampling date / time					08-Aug-2022 14:30	08-Aug-2022	08-Aug-2022 15:42	08-Aug-2022 15:35	08-Aug-2022 15:50
Analyte	CAS Number	Method	LOR	Unit	YL2201188-011	YL2201188-012	YL2201188-013	YL2201188-014	YL2201188-015
					Result	Result	Result	Result	Result
Total Metals									
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420.B-L	0.0020	mg/L	<0.0020	<0.0020	0.0113	0.0114	0.0118
cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0.000118	0.000102	0.0000323
calcium, total	7440-70-2	E420	0.050	mg/L	<0.050	<0.050	13.5	13.7	13.6
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0.00014	0.00011	<0.00010
cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	0.00032	0.00011	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0.00190	0.00175	0.00248
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0.048	0.017	0.015
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0.000165	0.000075	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0.0012	0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.0050	mg/L	<0.0050	<0.0050	4.04	4.07	4.14
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	0.0272	0.00981	0.00805
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	<0.000050	0.00100	0.000963	0.000994
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
potassium, total	7440-09-7	E420	0.050	mg/L	<0.050	<0.050	0.696	0.697	0.703
rubidium, total	7440-17-7	E420	0.00020	mg/L	<0.00020	<0.00020	0.00179	0.00150	0.00162
selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0.000070	0.000083	0.000067
silicon, total	7440-21-3	E420	0.10	mg/L	<0.10	<0.10	0.65	0.66	0.64
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L	<0.050	<0.050	2.51	2.50	2.59
strontium, total	7440-24-6	E420	0.00020	mg/L	<0.00020	<0.00020	0.0258	0.0258	0.0258
sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	4.45	4.58	4.28
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0.000021	0.000028	<0.000010
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0.00086	0.00032	0.00033



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-017	GBL-2022-0000 1-018 (Travel Blank)	GBL-2022-0000 1-022	GBL-2022-0000 1-023	GBL-2022-0000 1-024
Client sampling date / time					08-Aug-2022 14:30	08-Aug-2022	08-Aug-2022 15:42	08-Aug-2022 15:35	08-Aug-2022 15:50	
Analyte	CAS Number	Method	LOR	Unit	YL2201188-011	YL2201188-012	YL2201188-013	YL2201188-014	YL2201188-015	
					Result	Result	Result	Result	Result	
Total Metals										
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	<0.000010	0.000328	0.000308	0.000284	
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0.00052	<0.00050	<0.00050	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0.0400	0.0498	0.0209	
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0.0051	0.0047	0.0052	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0.00049	0.00047	0.00048	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	<0.00010	0.00716	0.00783	0.00676	
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421.B-L	0.0020	mg/L	<0.0020	<0.0020	0.0113	0.0117	0.0120	
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	<0.0000050	0.0000166	0.0000612	0.0000208	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	<0.050	13.7	13.8	13.4	
cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0.00145	0.00149	0.00198	
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	0.0013	0.0012	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	<0.0050	4.69	4.95	4.66	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0.00017	0.00014	<0.00010	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	<0.000050	0.00100	0.000969	0.000935	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	<0.050	0.810	0.875	0.759	
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	<0.00020	<0.00020	0.00176	0.00186	0.00151	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-017	GBL-2022-0000 1-018 (Travel Blank)	GBL-2022-0000 1-022	GBL-2022-0000 1-023	GBL-2022-0000 1-024
Client sampling date / time					08-Aug-2022 14:30	08-Aug-2022	08-Aug-2022 15:42	08-Aug-2022 15:35	08-Aug-2022 15:50	
Analyte	CAS Number	Method	LOR	Unit	YL2201188-011	YL2201188-012	YL2201188-013	YL2201188-014	YL2201188-015	
					Result	Result	Result	Result	Result	
Dissolved Metals										
selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0.000058	<0.000050	0.000052	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	<0.050	0.639	0.658	0.639	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	7440-23-5	E421	0.050	mg/L	0.079	0.077	2.85	2.84	2.71	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	<0.00020	0.0268	0.0258	0.0258	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	3.92	4.56	3.90	
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	0.000231	0.000225	0.000222	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0.0255	0.0445	0.0188	
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
dissolved mercury filtration location	----	EP509	-	-	Laboratory	Laboratory	Laboratory	Laboratory	Laboratory	
dissolved metals filtration location	----	EP421	-	-	Laboratory	Laboratory	Laboratory	Laboratory	Laboratory	
Aggregate Organics										
oil & grease (gravimetric)	----	E567	5.0	mg/L	----	<5.0	----	----	----	
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611A	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
ethylbenzene	100-41-4	E611A	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
toluene	108-88-3	E611A	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
xylene, m+p-	179601-23-1	E611A	0.40	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	
xylene, o-	95-47-6	E611A	0.30	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30	
xylenes, total	1330-20-7	E611A	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
BTEX, total	----	E611A	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Hydrocarbons										
F1 (C6-C10)	----	E581.VH+F1	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-017	GBL-2022-0000 1-018 (Travel Blank)	GBL-2022-0000 1-022	GBL-2022-0000 1-023	GBL-2022-0000 1-024
Client sampling date / time					08-Aug-2022 14:30	08-Aug-2022	08-Aug-2022 15:42	08-Aug-2022 15:35	08-Aug-2022 15:50	
Analyte	CAS Number	Method	LOR	Unit	YL2201188-011	YL2201188-012	YL2201188-013	YL2201188-014	YL2201188-015	
					Result	Result	Result	Result	Result	
Hydrocarbons										
F1-BTEX	----	EC580	25	µg/L	<100	<100	<100	<100	<100	
F2 (C10-C16)	----	E601	100	µg/L	<100	<100	<100	<100	<100	
F3 (C16-C34)	----	E601	250	µg/L	<250	<250	<250	<250	<250	
F4 (C34-C50)	----	E601	250	µg/L	<250	<250	<250	<250	<250	
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	E601	1.0	%	93.2	95.8	92.1	97.1	91.7	
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	%	103	86.2	101	99.6	108	
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611A	1.0	%	74.2	75.6	78.7	76.8	77.6	
difluorobenzene, 1,4-	540-36-3	E611A	1.0	%	99.4	99.6	98.7	98.6	99.0	
Radiological Parameters										
lead-210	14255-04-0	Pb210	0.037	Bq/L	see attached	----	----	----	----	
radium-226	13982-63-3	Ra226	-	Bq/L	see attached	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.





## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-025	GBL-2022-0000 1-031	----	----	----
Client sampling date / time					08-Aug-2022 15:59	08-Aug-2022 16:30	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	YL2201188-016	YL2201188-017	-----	-----	-----	
					Result	Result	----	----	----	
Physical Tests										
alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	41.8	----	----	----	----	
alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	
alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	----	----	----	----	
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	41.8	----	----	----	----	
conductivity	----	E100	1.0	µS/cm	106	----	----	----	----	
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.50	mg/L	50.0	----	----	----	----	
pH	----	E108	0.10	pH units	7.77	----	----	----	----	
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L	67.0	----	----	----	----	
solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	----	----	----	----	
turbidity	----	E121	0.10	NTU	0.41	----	----	----	----	
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0071	----	----	----	----	
chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	----	----	----	----	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.264	----	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	----	----	----	----	
nitrate + nitrite (as N)	----	EC235.N+N	0.0050	mg/L	<0.0051	----	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	----	----	----	----	
sulfate (as SO4)	14808-79-8	E235.SO4-L	0.050	mg/L	12.3	----	----	----	----	
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	7.12	----	----	----	----	
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	7.31	----	----	----	----	
Total Sulfides										
sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	----	----	----	----	
sulfide, total (as H2S)	7783-06-4	E395	0.0016	mg/L	<0.0016	----	----	----	----	
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0141	<0.0030	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00051	<0.00010	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.00675	<0.00010	----	----	----	
beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----	



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-025	GBL-2022-0000 1-031	----	----	----
Client sampling date / time						08-Aug-2022 15:59	08-Aug-2022 16:30	----	----	----
Analyte	CAS Number	Method	LOR	Unit	YL2201188-016	YL2201188-017	-----	-----	-----	-----
					Result	Result	----	----	----	----
<b>Total Metals</b>										
boron, total	7440-42-8	E420.B-L	0.0020	mg/L	0.0115	<0.0020	----	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000422	0.0000147	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	13.4	<0.050	----	----	----	----
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00017	<0.00010	----	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	0.00178	<0.00050	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	0.015	<0.010	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0011	<0.0010	----	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	4.02	<0.0050	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00806	<0.00010	----	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	----	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000999	<0.000050	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	----	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	0.688	<0.050	----	----	----	----
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00158	<0.00020	----	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000058	<0.000050	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	0.66	<0.10	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L	2.59	<0.050	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0256	<0.00020	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	4.37	<0.50	----	----	----	----
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000021	0.000015	----	----	----	----
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	----	----	----	----
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000296	0.000014	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-025	GBL-2022-0000 1-031	----	----	----
Client sampling date / time						08-Aug-2022 15:59	08-Aug-2022 16:30	----	----	----
Analyte	CAS Number	Method	LOR	Unit	YL2201188-016	YL2201188-017	-----	-----	-----	-----
					Result	Result	----	----	----	----
<b>Total Metals</b>										
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0216	<0.0030	----	----	----	----
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	----	----	----	----
<b>Dissolved Metals</b>										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0070	<0.0010	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00044	<0.00010	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00652	<0.00010	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421.B-L	0.0020	mg/L	0.0119	<0.0020	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000206	<0.0000050	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	13.2	<0.050	----	----	----	----
cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00166	<0.00020	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0012	<0.0010	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	4.07	<0.0050	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000974	<0.000050	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.707	<0.050	----	----	----	----
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00144	<0.00020	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000052	<0.000050	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	0.632	<0.050	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	----



## Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	GBL-2022-0000 1-025	GBL-2022-0000 1-031	----	----	----
Client sampling date / time						08-Aug-2022 15:59	08-Aug-2022 16:30	----	----	----
Analyte	CAS Number	Method	LOR	Unit	YL2201188-016	YL2201188-017	-----	-----	-----	-----
					Result	Result	----	----	----	----
<b>Dissolved Metals</b>										
sodium, dissolved	7440-23-5	E421	0.050	mg/L	2.54	0.083	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0262	<0.00020	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	4.33	<0.50	----	----	----	----
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----	----
thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	----
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000300	<0.000010	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0155	<0.0010	----	----	----	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-	Laboratory	Laboratory	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Laboratory	Laboratory	----	----	----	----
<b>Volatile Organic Compounds [Fuels]</b>										
benzene	71-43-2	E611A	0.50	µg/L	<0.50	----	----	----	----	----
ethylbenzene	100-41-4	E611A	0.50	µg/L	<0.50	----	----	----	----	----
toluene	108-88-3	E611A	0.50	µg/L	<0.50	----	----	----	----	----
xylene, m+p-	179601-23-1	E611A	0.40	µg/L	<0.40	----	----	----	----	----
xylene, o-	95-47-6	E611A	0.30	µg/L	<0.30	----	----	----	----	----
xylenes, total	1330-20-7	E611A	0.50	µg/L	<0.50	----	----	----	----	----
BTEX, total	----	E611A	1.0	µg/L	<1.0	----	----	----	----	----
<b>Hydrocarbons</b>										
F1 (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----	----	----	----	----
F1-BTEX	----	EC580	25	µg/L	<100	----	----	----	----	----
F2 (C10-C16)	----	E601	100	µg/L	<100	----	----	----	----	----
F3 (C16-C34)	----	E601	250	µg/L	<250	----	----	----	----	----
F4 (C34-C50)	----	E601	250	µg/L	<250	----	----	----	----	----
<b>Hydrocarbons Surrogates</b>										
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	E601	1.0	%	95.0	----	----	----	----	----



Analytical Results

Sub-Matrix: Water					Client sample ID	GBL-2022-0000 1-025	GBL-2022-0000 1-031	----	----	----
(Matrix: Water)										
					Client sampling date / time	08-Aug-2022 15:59	08-Aug-2022 16:30	----	----	----
Analyte	CAS Number	Method	LOR	Unit	YL2201188-016	YL2201188-017	-----	-----	-----	
					Result	Result	----	----	----	
Hydrocarbons Surrogates										
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	%	102	----	----	----	----	
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611A	1.0	%	74.6	----	----	----	----	
difluorobenzene, 1,4-	540-36-3	E611A	1.0	%	99.2	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.



## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: YL2201188	Page	: 1 of 56
Client	: AECOM Canada Ltd.	Laboratory	: Yellowknife - Environmental
Contact	: Jessica Stepney	Account Manager	: Pamela Toledo
Address	: 101 - 18817 Stony Plain Rd. NW Edmonton AB Canada T5S 0C2	Address	: 314 Old Airport Road, Unit 116 Yellowknife, Northwest Territories Canada X1A 3T3
Telephone	: 780-486-5921	Telephone	: +1 867 873 5593
Project	: ----	Date Samples Received	: 10-Aug-2022 16:00
PO	: ----	Issue Date	: 28-Sep-2022 14:23
C-O-C number	: ----		
Sampler	: Rebecca Hurtubise		
Site	: ----		
Quote number	: EO2022-AECO100-012 Great Bear Lake		
No. of samples received	: 17		
No. of samples analysed	: 17		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

### **Workorder Comments**

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

### **Summary of Outliers**

#### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

#### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

#### **Outliers : Analysis Holding Time Compliance (Breaches)**

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Aggregate Organics : Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid) GBL-2022-00001-018 (Travel Blank)	E567	08-Aug-2022	18-Aug-2022	28 days	10 days	✓	18-Aug-2022	40 days	0 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) GBL-2022-00001-006	E298	08-Aug-2022	01-Sep-2022	----	----		03-Sep-2022	28 days	25 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) GBL-2022-00001-008	E298	08-Aug-2022	01-Sep-2022	----	----		03-Sep-2022	28 days	25 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) GBL-2022-00001-005	E298	08-Aug-2022	01-Sep-2022	----	----		03-Sep-2022	28 days	26 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) GBL-2022-00001-007	E298	08-Aug-2022	01-Sep-2022	----	----		03-Sep-2022	28 days	26 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) GBL-2022-00001-009	E298	08-Aug-2022	01-Sep-2022	----	----		03-Sep-2022	28 days	26 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) GBL-2022-00001-010	E298	08-Aug-2022	01-Sep-2022	----	----		03-Sep-2022	28 days	26 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) GBL-2022-00001-011	E298	08-Aug-2022	01-Sep-2022	----	----		03-Sep-2022	28 days	26 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) GBL-2022-00001-012	E298	08-Aug-2022	01-Sep-2022	----	----		03-Sep-2022	28 days	26 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) GBL-2022-00001-013	E298	08-Aug-2022	01-Sep-2022	----	----		03-Sep-2022	28 days	26 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) GBL-2022-00001-015	E298	08-Aug-2022	01-Sep-2022	----	----		03-Sep-2022	28 days	26 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) GBL-2022-00001-017	E298	08-Aug-2022	01-Sep-2022	----	----		03-Sep-2022	28 days	26 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) GBL-2022-00001-018 (Travel Blank)	E298	08-Aug-2022	01-Sep-2022	----	----		03-Sep-2022	28 days	26 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) GBL-2022-00001-022	E298	08-Aug-2022	01-Sep-2022	----	----		03-Sep-2022	28 days	26 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) GBL-2022-00001-023	E298	08-Aug-2022	01-Sep-2022	----	----		03-Sep-2022	28 days	26 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) GBL-2022-00001-024	E298	08-Aug-2022	01-Sep-2022	----	----		03-Sep-2022	28 days	26 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) GBL-2022-00001-025	E298	08-Aug-2022	01-Sep-2022	----	----		03-Sep-2022	28 days	26 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE GBL-2022-00001-005	E235.Cl	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE GBL-2022-00001-006	E235.Cl	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE GBL-2022-00001-007	E235.Cl	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE GBL-2022-00001-008	E235.Cl	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE GBL-2022-00001-009	E235.Cl	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE GBL-2022-00001-010	E235.Cl	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE GBL-2022-00001-011	E235.Cl	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE GBL-2022-00001-012	E235.Cl	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Chloride in Water by IC										
HDPE GBL-2022-00001-013	E235.Cl	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE GBL-2022-00001-015	E235.Cl	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE GBL-2022-00001-017	E235.Cl	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE GBL-2022-00001-018 (Travel Blank)	E235.Cl	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE GBL-2022-00001-022	E235.Cl	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE GBL-2022-00001-023	E235.Cl	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE GBL-2022-00001-024	E235.Cl	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE GBL-2022-00001-025	E235.Cl	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE GBL-2022-00001-005	E235.F	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Fluoride in Water by IC										
HDPE GBL-2022-00001-006	E235.F	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE GBL-2022-00001-007	E235.F	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE GBL-2022-00001-008	E235.F	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE GBL-2022-00001-009	E235.F	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE GBL-2022-00001-010	E235.F	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE GBL-2022-00001-011	E235.F	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE GBL-2022-00001-012	E235.F	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE GBL-2022-00001-013	E235.F	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE GBL-2022-00001-015	E235.F	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Fluoride in Water by IC										
HDPE GBL-2022-00001-017	E235.F	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE GBL-2022-00001-018 (Travel Blank)	E235.F	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE GBL-2022-00001-022	E235.F	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE GBL-2022-00001-023	E235.F	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE GBL-2022-00001-024	E235.F	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE GBL-2022-00001-025	E235.F	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE GBL-2022-00001-005	E235.NO3-L	08-Aug-2022	15-Aug-2022	3 days	7 days	✖ EHT	15-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE GBL-2022-00001-006	E235.NO3-L	08-Aug-2022	15-Aug-2022	3 days	7 days	✖ EHT	15-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE GBL-2022-00001-007	E235.NO3-L	08-Aug-2022	15-Aug-2022	3 days	7 days	✖ EHT	15-Aug-2022	3 days	0 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE GBL-2022-00001-008	E235.NO3-L	08-Aug-2022	15-Aug-2022	3 days	7 days	✖ EHT	15-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE GBL-2022-00001-009	E235.NO3-L	08-Aug-2022	15-Aug-2022	3 days	7 days	✖ EHT	15-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE GBL-2022-00001-010	E235.NO3-L	08-Aug-2022	15-Aug-2022	3 days	7 days	✖ EHT	15-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE GBL-2022-00001-011	E235.NO3-L	08-Aug-2022	15-Aug-2022	3 days	7 days	✖ EHT	15-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE GBL-2022-00001-012	E235.NO3-L	08-Aug-2022	15-Aug-2022	3 days	7 days	✖ EHT	15-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE GBL-2022-00001-013	E235.NO3-L	08-Aug-2022	15-Aug-2022	3 days	7 days	✖ EHT	15-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE GBL-2022-00001-015	E235.NO3-L	08-Aug-2022	15-Aug-2022	3 days	7 days	✖ EHT	15-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE GBL-2022-00001-017	E235.NO3-L	08-Aug-2022	15-Aug-2022	3 days	7 days	✖ EHT	15-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE GBL-2022-00001-018 (Travel Blank)	E235.NO3-L	08-Aug-2022	15-Aug-2022	3 days	7 days	✖ EHT	15-Aug-2022	3 days	0 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE GBL-2022-00001-022	E235.NO3-L	08-Aug-2022	15-Aug-2022	3 days	7 days	✖ EHT	15-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE GBL-2022-00001-023	E235.NO3-L	08-Aug-2022	15-Aug-2022	3 days	7 days	✖ EHT	15-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE GBL-2022-00001-024	E235.NO3-L	08-Aug-2022	15-Aug-2022	3 days	7 days	✖ EHT	15-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE GBL-2022-00001-025	E235.NO3-L	08-Aug-2022	15-Aug-2022	3 days	7 days	✖ EHT	15-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE GBL-2022-00001-005	E235.NO2-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	7 days	✖ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE GBL-2022-00001-006	E235.NO2-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	7 days	✖ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE GBL-2022-00001-007	E235.NO2-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	7 days	✖ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE GBL-2022-00001-008	E235.NO2-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	7 days	✖ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE GBL-2022-00001-009	E235.NO2-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	7 days	✖ EHT





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE GBL-2022-00001-010	E235.NO2-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	7 days	<div>✖ EHT</div>
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE GBL-2022-00001-011	E235.NO2-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	7 days	<div>✖ EHT</div>
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE GBL-2022-00001-012	E235.NO2-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	7 days	<div>✖ EHT</div>
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE GBL-2022-00001-013	E235.NO2-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	7 days	<div>✖ EHT</div>
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE GBL-2022-00001-015	E235.NO2-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	7 days	<div>✖ EHT</div>
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE GBL-2022-00001-017	E235.NO2-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	7 days	<div>✖ EHT</div>
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE GBL-2022-00001-018 (Travel Blank)	E235.NO2-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	7 days	<div>✖ EHT</div>
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE GBL-2022-00001-022	E235.NO2-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	7 days	<div>✖ EHT</div>
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE GBL-2022-00001-023	E235.NO2-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	7 days	<div>✖ EHT</div>



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE GBL-2022-00001-024	E235.NO2-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	7 days	* EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE GBL-2022-00001-025	E235.NO2-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	3 days	7 days	* EHT
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE GBL-2022-00001-005	E235.SO4-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE GBL-2022-00001-006	E235.SO4-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE GBL-2022-00001-007	E235.SO4-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE GBL-2022-00001-008	E235.SO4-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE GBL-2022-00001-009	E235.SO4-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE GBL-2022-00001-010	E235.SO4-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE GBL-2022-00001-011	E235.SO4-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE GBL-2022-00001-012	E235.S04-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE GBL-2022-00001-013	E235.S04-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE GBL-2022-00001-015	E235.S04-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE GBL-2022-00001-017	E235.S04-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE GBL-2022-00001-018 (Travel Blank)	E235.S04-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE GBL-2022-00001-022	E235.S04-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE GBL-2022-00001-023	E235.S04-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE GBL-2022-00001-024	E235.S04-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC (Low Level)										
HDPE GBL-2022-00001-025	E235.S04-L	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓



Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Dissolved Metals : Dissolved Boron in Water by CRC ICPMS (Low level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-005	E421.B-L	08-Aug-2022	17-Aug-2022	180 days	9 days	✓	17-Aug-2022	171 days	0 days	✓
Dissolved Metals : Dissolved Boron in Water by CRC ICPMS (Low level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-006	E421.B-L	08-Aug-2022	17-Aug-2022	180 days	9 days	✓	17-Aug-2022	171 days	0 days	✓
Dissolved Metals : Dissolved Boron in Water by CRC ICPMS (Low level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-007	E421.B-L	08-Aug-2022	17-Aug-2022	180 days	9 days	✓	17-Aug-2022	171 days	0 days	✓
Dissolved Metals : Dissolved Boron in Water by CRC ICPMS (Low level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-008	E421.B-L	08-Aug-2022	17-Aug-2022	180 days	9 days	✓	17-Aug-2022	171 days	0 days	✓
Dissolved Metals : Dissolved Boron in Water by CRC ICPMS (Low level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-009	E421.B-L	08-Aug-2022	17-Aug-2022	180 days	9 days	✓	17-Aug-2022	171 days	0 days	✓
Dissolved Metals : Dissolved Boron in Water by CRC ICPMS (Low level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-010	E421.B-L	08-Aug-2022	17-Aug-2022	180 days	9 days	✓	17-Aug-2022	171 days	0 days	✓
Dissolved Metals : Dissolved Boron in Water by CRC ICPMS (Low level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-012	E421.B-L	08-Aug-2022	17-Aug-2022	180 days	9 days	✓	17-Aug-2022	171 days	0 days	✓
Dissolved Metals : Dissolved Boron in Water by CRC ICPMS (Low level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-015	E421.B-L	08-Aug-2022	17-Aug-2022	180 days	9 days	✓	17-Aug-2022	171 days	0 days	✓
Dissolved Metals : Dissolved Boron in Water by CRC ICPMS (Low level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-017	E421.B-L	08-Aug-2022	17-Aug-2022	180 days	9 days	✓	17-Aug-2022	171 days	0 days	✓



Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Dissolved Metals : Dissolved Boron in Water by CRC ICPMS (Low level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-018 (Travel Blank)	E421.B-L	08-Aug-2022	17-Aug-2022	180 days	9 days	✓	17-Aug-2022	171 days	0 days	✓
Dissolved Metals : Dissolved Boron in Water by CRC ICPMS (Low level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-022	E421.B-L	08-Aug-2022	17-Aug-2022	180 days	9 days	✓	17-Aug-2022	171 days	0 days	✓
Dissolved Metals : Dissolved Boron in Water by CRC ICPMS (Low level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-023	E421.B-L	08-Aug-2022	17-Aug-2022	180 days	9 days	✓	17-Aug-2022	171 days	0 days	✓
Dissolved Metals : Dissolved Boron in Water by CRC ICPMS (Low level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-024	E421.B-L	08-Aug-2022	17-Aug-2022	180 days	9 days	✓	17-Aug-2022	171 days	0 days	✓
Dissolved Metals : Dissolved Boron in Water by CRC ICPMS (Low level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-025	E421.B-L	08-Aug-2022	17-Aug-2022	180 days	9 days	✓	17-Aug-2022	171 days	0 days	✓
Dissolved Metals : Dissolved Boron in Water by CRC ICPMS (Low level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-031	E421.B-L	08-Aug-2022	17-Aug-2022	180 days	9 days	✓	17-Aug-2022	171 days	0 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-005	E421.Cr-L	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-006	E421.Cr-L	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-007	E421.Cr-L	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓





Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-008	E421.Cr-L	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-009	E421.Cr-L	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-010	E421.Cr-L	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-012	E421.Cr-L	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-015	E421.Cr-L	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-017	E421.Cr-L	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-018 (Travel Blank)	E421.Cr-L	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-022	E421.Cr-L	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-023	E421.Cr-L	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓



Matrix: **Water**

Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-024	E421.Cr-L	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-025	E421.Cr-L	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE - dissolved (lab preserved) GBL-2022-00001-031	E421.Cr-L	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) GBL-2022-00001-005	E509	08-Aug-2022	15-Sep-2022	28 days	38 days	✖ EHT	15-Sep-2022	-10 days	0 days	✖ EHT
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) GBL-2022-00001-006	E509	08-Aug-2022	15-Sep-2022	28 days	38 days	✖ EHT	15-Sep-2022	-10 days	0 days	✖ EHT
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) GBL-2022-00001-007	E509	08-Aug-2022	15-Sep-2022	28 days	38 days	✖ EHT	15-Sep-2022	-10 days	0 days	✖ EHT
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) GBL-2022-00001-008	E509	08-Aug-2022	15-Sep-2022	28 days	38 days	✖ EHT	15-Sep-2022	-10 days	0 days	✖ EHT
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) GBL-2022-00001-009	E509	08-Aug-2022	15-Sep-2022	28 days	38 days	✖ EHT	15-Sep-2022	-10 days	0 days	✖ EHT
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) GBL-2022-00001-010	E509	08-Aug-2022	15-Sep-2022	28 days	38 days	✖ EHT	15-Sep-2022	-10 days	0 days	✖ EHT



Matrix: **Water**

Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) GBL-2022-00001-011	E509	08-Aug-2022	15-Sep-2022	28 days	38 days	* EHT	15-Sep-2022	-10 days	0 days	* EHT
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) GBL-2022-00001-012	E509	08-Aug-2022	15-Sep-2022	28 days	38 days	* EHT	15-Sep-2022	-10 days	0 days	* EHT
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) GBL-2022-00001-013	E509	08-Aug-2022	15-Sep-2022	28 days	38 days	* EHT	15-Sep-2022	-10 days	0 days	* EHT
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) GBL-2022-00001-015	E509	08-Aug-2022	15-Sep-2022	28 days	38 days	* EHT	15-Sep-2022	-10 days	0 days	* EHT
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) GBL-2022-00001-017	E509	08-Aug-2022	15-Sep-2022	28 days	38 days	* EHT	15-Sep-2022	-10 days	0 days	* EHT
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) GBL-2022-00001-018 (Travel Blank)	E509	08-Aug-2022	15-Sep-2022	28 days	38 days	* EHT	15-Sep-2022	-10 days	0 days	* EHT
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) GBL-2022-00001-022	E509	08-Aug-2022	15-Sep-2022	28 days	38 days	* EHT	15-Sep-2022	-10 days	0 days	* EHT
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) GBL-2022-00001-023	E509	08-Aug-2022	15-Sep-2022	28 days	38 days	* EHT	15-Sep-2022	-10 days	0 days	* EHT
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) GBL-2022-00001-024	E509	08-Aug-2022	15-Sep-2022	28 days	38 days	* EHT	15-Sep-2022	-10 days	0 days	* EHT



Matrix: **Water**

Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) GBL-2022-00001-025	E509	08-Aug-2022	15-Sep-2022	28 days	38 days	* EHT	15-Sep-2022	-10 days	0 days	* EHT
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) GBL-2022-00001-031	E509	08-Aug-2022	15-Sep-2022	28 days	38 days	* EHT	15-Sep-2022	-10 days	0 days	* EHT
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) GBL-2022-00001-005	E421	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) GBL-2022-00001-006	E421	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) GBL-2022-00001-007	E421	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) GBL-2022-00001-008	E421	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) GBL-2022-00001-009	E421	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) GBL-2022-00001-010	E421	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) GBL-2022-00001-011	E421	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓



Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) GBL-2022-00001-012	E421	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) GBL-2022-00001-013	E421	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) GBL-2022-00001-015	E421	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) GBL-2022-00001-017	E421	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) GBL-2022-00001-018 (Travel Blank)	E421	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) GBL-2022-00001-022	E421	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) GBL-2022-00001-023	E421	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) GBL-2022-00001-024	E421	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) GBL-2022-00001-025	E421	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓





Matrix: **Water**

Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) GBL-2022-00001-031	E421	08-Aug-2022	17-Aug-2022	----	----		17-Aug-2022	180 days	9 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) GBL-2022-00001-010	E601	08-Aug-2022	18-Aug-2022	14 days	10 days	✓	19-Aug-2022	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) GBL-2022-00001-005	E601	08-Aug-2022	18-Aug-2022	14 days	9 days	✓	19-Aug-2022	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) GBL-2022-00001-006	E601	08-Aug-2022	18-Aug-2022	14 days	9 days	✓	19-Aug-2022	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) GBL-2022-00001-007	E601	08-Aug-2022	18-Aug-2022	14 days	9 days	✓	19-Aug-2022	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) GBL-2022-00001-008	E601	08-Aug-2022	18-Aug-2022	14 days	9 days	✓	19-Aug-2022	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) GBL-2022-00001-009	E601	08-Aug-2022	18-Aug-2022	14 days	9 days	✓	19-Aug-2022	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) GBL-2022-00001-015	E601	08-Aug-2022	18-Aug-2022	14 days	9 days	✓	19-Aug-2022	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) GBL-2022-00001-017	E601	08-Aug-2022	18-Aug-2022	14 days	9 days	✓	19-Aug-2022	40 days	2 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) GBL-2022-00001-018 (Travel Blank)	E601	08-Aug-2022	18-Aug-2022	14 days	9 days	✓	19-Aug-2022	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) GBL-2022-00001-022	E601	08-Aug-2022	18-Aug-2022	14 days	9 days	✓	19-Aug-2022	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) GBL-2022-00001-023	E601	08-Aug-2022	18-Aug-2022	14 days	9 days	✓	19-Aug-2022	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) GBL-2022-00001-024	E601	08-Aug-2022	18-Aug-2022	14 days	9 days	✓	19-Aug-2022	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) GBL-2022-00001-025	E601	08-Aug-2022	18-Aug-2022	14 days	9 days	✓	19-Aug-2022	40 days	2 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) GBL-2022-00001-005	E581.VH+F1	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) GBL-2022-00001-006	E581.VH+F1	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) GBL-2022-00001-007	E581.VH+F1	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) GBL-2022-00001-008	E581.VH+F1	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) GBL-2022-00001-009	E581.VH+F1	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) GBL-2022-00001-010	E581.VH+F1	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) GBL-2022-00001-015	E581.VH+F1	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) GBL-2022-00001-017	E581.VH+F1	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) GBL-2022-00001-018 (Travel Blank)	E581.VH+F1	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) GBL-2022-00001-022	E581.VH+F1	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) GBL-2022-00001-023	E581.VH+F1	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) GBL-2022-00001-024	E581.VH+F1	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) GBL-2022-00001-025	E581.VH+F1	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✓



Matrix: **Water**

Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) GBL-2022-00001-005	E358-L	08-Aug-2022	16-Aug-2022	3 days	7 days	* EHT	16-Aug-2022	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) GBL-2022-00001-006	E358-L	08-Aug-2022	16-Aug-2022	3 days	7 days	* EHT	16-Aug-2022	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) GBL-2022-00001-007	E358-L	08-Aug-2022	16-Aug-2022	3 days	7 days	* EHT	16-Aug-2022	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) GBL-2022-00001-008	E358-L	08-Aug-2022	16-Aug-2022	3 days	7 days	* EHT	16-Aug-2022	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) GBL-2022-00001-011	E358-L	08-Aug-2022	16-Aug-2022	3 days	7 days	* EHT	16-Aug-2022	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) GBL-2022-00001-012	E358-L	08-Aug-2022	16-Aug-2022	3 days	7 days	* EHT	16-Aug-2022	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) GBL-2022-00001-018 (Travel Blank)	E358-L	08-Aug-2022	16-Aug-2022	3 days	7 days	* EHT	16-Aug-2022	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) GBL-2022-00001-022	E358-L	08-Aug-2022	16-Aug-2022	3 days	7 days	* EHT	16-Aug-2022	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) GBL-2022-00001-023	E358-L	08-Aug-2022	16-Aug-2022	3 days	7 days	* EHT	16-Aug-2022	28 days	0 days	✓



Matrix: **Water**

Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) GBL-2022-00001-024	E358-L	08-Aug-2022	16-Aug-2022	3 days	7 days	* EHT	16-Aug-2022	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) GBL-2022-00001-025	E358-L	08-Aug-2022	16-Aug-2022	3 days	7 days	* EHT	16-Aug-2022	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) GBL-2022-00001-009	E358-L	08-Aug-2022	16-Aug-2022	3 days	8 days	* EHT	16-Aug-2022	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) GBL-2022-00001-010	E358-L	08-Aug-2022	16-Aug-2022	3 days	8 days	* EHT	16-Aug-2022	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) GBL-2022-00001-013	E358-L	08-Aug-2022	16-Aug-2022	3 days	8 days	* EHT	16-Aug-2022	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) GBL-2022-00001-015	E358-L	08-Aug-2022	16-Aug-2022	3 days	8 days	* EHT	16-Aug-2022	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) GBL-2022-00001-017	E358-L	08-Aug-2022	16-Aug-2022	3 days	8 days	* EHT	16-Aug-2022	28 days	0 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) GBL-2022-00001-005	E355-L	08-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) GBL-2022-00001-006	E355-L	08-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	28 days	7 days	✓





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) GBL-2022-00001-007	E355-L	08-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) GBL-2022-00001-008	E355-L	08-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) GBL-2022-00001-009	E355-L	08-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) GBL-2022-00001-011	E355-L	08-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) GBL-2022-00001-012	E355-L	08-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) GBL-2022-00001-017	E355-L	08-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) GBL-2022-00001-018 (Travel Blank)	E355-L	08-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) GBL-2022-00001-022	E355-L	08-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) GBL-2022-00001-023	E355-L	08-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	28 days	7 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) GBL-2022-00001-024	E355-L	08-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) GBL-2022-00001-025	E355-L	08-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) GBL-2022-00001-010	E355-L	08-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) GBL-2022-00001-013	E355-L	08-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) GBL-2022-00001-015	E355-L	08-Aug-2022	16-Aug-2022	----	----		16-Aug-2022	28 days	8 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE GBL-2022-00001-005	E290	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE GBL-2022-00001-006	E290	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE GBL-2022-00001-007	E290	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE GBL-2022-00001-008	E290	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	14 days	7 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : Alkalinity Species by Titration										
HDPE GBL-2022-00001-009	E290	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE GBL-2022-00001-010	E290	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE GBL-2022-00001-011	E290	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE GBL-2022-00001-012	E290	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE GBL-2022-00001-013	E290	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE GBL-2022-00001-015	E290	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE GBL-2022-00001-017	E290	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE GBL-2022-00001-018 (Travel Blank)	E290	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE GBL-2022-00001-022	E290	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	14 days	7 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : Alkalinity Species by Titration										
HDPE GBL-2022-00001-023	E290	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE GBL-2022-00001-024	E290	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE GBL-2022-00001-025	E290	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	14 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE GBL-2022-00001-005	E100	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE GBL-2022-00001-006	E100	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE GBL-2022-00001-007	E100	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE GBL-2022-00001-008	E100	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE GBL-2022-00001-009	E100	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE GBL-2022-00001-010	E100	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : Conductivity in Water										
HDPE GBL-2022-00001-011	E100	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE GBL-2022-00001-012	E100	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE GBL-2022-00001-013	E100	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE GBL-2022-00001-015	E100	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE GBL-2022-00001-017	E100	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE GBL-2022-00001-018 (Travel Blank)	E100	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE GBL-2022-00001-022	E100	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE GBL-2022-00001-023	E100	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE GBL-2022-00001-024	E100	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : Conductivity in Water										
HDPE GBL-2022-00001-025	E100	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	28 days	7 days	✓
Physical Tests : pH by Meter										
HDPE GBL-2022-00001-005	E108	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	0.25 hrs	1.94 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE GBL-2022-00001-006	E108	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	0.25 hrs	1.94 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE GBL-2022-00001-007	E108	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	0.25 hrs	1.94 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE GBL-2022-00001-008	E108	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	0.25 hrs	1.94 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE GBL-2022-00001-009	E108	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	0.25 hrs	1.94 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE GBL-2022-00001-010	E108	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	0.25 hrs	1.94 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE GBL-2022-00001-011	E108	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	0.25 hrs	1.94 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE GBL-2022-00001-012	E108	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	0.25 hrs	1.94 hrs	✖ EHTR-FM



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : pH by Meter										
HDPE GBL-2022-00001-013	E108	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	0.25 hrs	1.94 hrs	<div><div>*</div><div>EHTR-FM</div></div>
Physical Tests : pH by Meter										
HDPE GBL-2022-00001-015	E108	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	0.25 hrs	1.94 hrs	<div><div>*</div><div>EHTR-FM</div></div>
Physical Tests : pH by Meter										
HDPE GBL-2022-00001-017	E108	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	0.25 hrs	1.94 hrs	<div><div>*</div><div>EHTR-FM</div></div>
Physical Tests : pH by Meter										
HDPE GBL-2022-00001-018 (Travel Blank)	E108	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	0.25 hrs	1.94 hrs	<div><div>*</div><div>EHTR-FM</div></div>
Physical Tests : pH by Meter										
HDPE GBL-2022-00001-022	E108	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	0.25 hrs	1.94 hrs	<div><div>*</div><div>EHTR-FM</div></div>
Physical Tests : pH by Meter										
HDPE GBL-2022-00001-023	E108	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	0.25 hrs	1.94 hrs	<div><div>*</div><div>EHTR-FM</div></div>
Physical Tests : pH by Meter										
HDPE GBL-2022-00001-024	E108	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	0.25 hrs	1.94 hrs	<div><div>*</div><div>EHTR-FM</div></div>
Physical Tests : pH by Meter										
HDPE GBL-2022-00001-025	E108	08-Aug-2022	15-Aug-2022	----	----		15-Aug-2022	0.25 hrs	1.94 hrs	<div><div>*</div><div>EHTR-FM</div></div>
Physical Tests : TSS by Gravimetry										
HDPE GBL-2022-00001-005	E160	08-Aug-2022	----	----	----		16-Aug-2022	7 days	7 days	<div><div>*</div></div>



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : TSS by Gravimetry										
HDPE GBL-2022-00001-006	E160	08-Aug-2022	----	----	----		16-Aug-2022	7 days	7 days	✖
Physical Tests : TSS by Gravimetry										
HDPE GBL-2022-00001-007	E160	08-Aug-2022	----	----	----		16-Aug-2022	7 days	7 days	✖
Physical Tests : TSS by Gravimetry										
HDPE GBL-2022-00001-008	E160	08-Aug-2022	----	----	----		16-Aug-2022	7 days	7 days	✖
Physical Tests : TSS by Gravimetry										
HDPE GBL-2022-00001-009	E160	08-Aug-2022	----	----	----		16-Aug-2022	7 days	7 days	✖
Physical Tests : TSS by Gravimetry										
HDPE GBL-2022-00001-010	E160	08-Aug-2022	----	----	----		16-Aug-2022	7 days	7 days	✖
Physical Tests : TSS by Gravimetry										
HDPE GBL-2022-00001-011	E160	08-Aug-2022	----	----	----		16-Aug-2022	7 days	7 days	✖
Physical Tests : TSS by Gravimetry										
HDPE GBL-2022-00001-012	E160	08-Aug-2022	----	----	----		16-Aug-2022	7 days	7 days	✖
Physical Tests : TSS by Gravimetry										
HDPE GBL-2022-00001-015	E160	08-Aug-2022	----	----	----		16-Aug-2022	7 days	7 days	✖
Physical Tests : TSS by Gravimetry										
HDPE GBL-2022-00001-017	E160	08-Aug-2022	----	----	----		16-Aug-2022	7 days	7 days	✖



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : TSS by Gravimetry										
HDPE GBL-2022-00001-018 (Travel Blank)	E160	08-Aug-2022	----	----	----		16-Aug-2022	7 days	7 days	✖
Physical Tests : TSS by Gravimetry										
HDPE GBL-2022-00001-022	E160	08-Aug-2022	----	----	----		16-Aug-2022	7 days	7 days	✖
Physical Tests : TSS by Gravimetry										
HDPE GBL-2022-00001-023	E160	08-Aug-2022	----	----	----		16-Aug-2022	7 days	7 days	✖
Physical Tests : TSS by Gravimetry										
HDPE GBL-2022-00001-024	E160	08-Aug-2022	----	----	----		16-Aug-2022	7 days	7 days	✖
Physical Tests : TSS by Gravimetry										
HDPE GBL-2022-00001-025	E160	08-Aug-2022	----	----	----		16-Aug-2022	7 days	7 days	✖
Physical Tests : TSS by Gravimetry										
HDPE GBL-2022-00001-013	E160	08-Aug-2022	----	----	----		16-Aug-2022	7 days	8 days	✖ EHT
Physical Tests : Turbidity by Nephelometry										
HDPE GBL-2022-00001-005	E121	08-Aug-2022	----	----	----		02-Sep-2022	3 days	25 days	✖ EHT
Physical Tests : Turbidity by Nephelometry										
HDPE GBL-2022-00001-006	E121	08-Aug-2022	----	----	----		02-Sep-2022	3 days	25 days	✖ EHT
Physical Tests : Turbidity by Nephelometry										
HDPE GBL-2022-00001-007	E121	08-Aug-2022	----	----	----		02-Sep-2022	3 days	25 days	✖ EHT



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : Turbidity by Nephelometry										
HDPE GBL-2022-00001-008	E121	08-Aug-2022	----	----	----		02-Sep-2022	3 days	25 days	<div>✖ EHT</div>
Physical Tests : Turbidity by Nephelometry										
HDPE GBL-2022-00001-009	E121	08-Aug-2022	----	----	----		02-Sep-2022	3 days	25 days	<div>✖ EHT</div>
Physical Tests : Turbidity by Nephelometry										
HDPE GBL-2022-00001-010	E121	08-Aug-2022	----	----	----		02-Sep-2022	3 days	25 days	<div>✖ EHT</div>
Physical Tests : Turbidity by Nephelometry										
HDPE GBL-2022-00001-011	E121	08-Aug-2022	----	----	----		02-Sep-2022	3 days	25 days	<div>✖ EHT</div>
Physical Tests : Turbidity by Nephelometry										
HDPE GBL-2022-00001-012	E121	08-Aug-2022	----	----	----		02-Sep-2022	3 days	25 days	<div>✖ EHT</div>
Physical Tests : Turbidity by Nephelometry										
HDPE GBL-2022-00001-013	E121	08-Aug-2022	----	----	----		02-Sep-2022	3 days	25 days	<div>✖ EHT</div>
Physical Tests : Turbidity by Nephelometry										
HDPE GBL-2022-00001-015	E121	08-Aug-2022	----	----	----		02-Sep-2022	3 days	25 days	<div>✖ EHT</div>
Physical Tests : Turbidity by Nephelometry										
HDPE GBL-2022-00001-017	E121	08-Aug-2022	----	----	----		02-Sep-2022	3 days	25 days	<div>✖ EHT</div>
Physical Tests : Turbidity by Nephelometry										
HDPE GBL-2022-00001-018 (Travel Blank)	E121	08-Aug-2022	----	----	----		02-Sep-2022	3 days	25 days	<div>✖ EHT</div>





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : Turbidity by Nephelometry										
HDPE GBL-2022-00001-022	E121	08-Aug-2022	----	----	----		02-Sep-2022	3 days	25 days	* EHT
Physical Tests : Turbidity by Nephelometry										
HDPE GBL-2022-00001-023	E121	08-Aug-2022	----	----	----		02-Sep-2022	3 days	25 days	* EHT
Physical Tests : Turbidity by Nephelometry										
HDPE GBL-2022-00001-024	E121	08-Aug-2022	----	----	----		02-Sep-2022	3 days	25 days	* EHT
Physical Tests : Turbidity by Nephelometry										
HDPE GBL-2022-00001-025	E121	08-Aug-2022	----	----	----		02-Sep-2022	3 days	25 days	* EHT
Radiological Parameters : Lead 210 in Water by Gas Flow Proportional Counting										
HDPE (nitric acid) GBL-2022-00001-009	Pb210	08-Aug-2022	----	----	----		26-Aug-2022	----	----	
Radiological Parameters : Lead 210 in Water by Gas Flow Proportional Counting										
HDPE (nitric acid) GBL-2022-00001-010	Pb210	08-Aug-2022	----	----	----		26-Aug-2022	----	----	
Radiological Parameters : Lead 210 in Water by Gas Flow Proportional Counting										
HDPE (nitric acid) GBL-2022-00001-013	Pb210	08-Aug-2022	----	----	----		26-Sep-2022	----	----	
Radiological Parameters : Lead 210 in Water by Gas Flow Proportional Counting										
HDPE (nitric acid) GBL-2022-00001-015	Pb210	08-Aug-2022	----	----	----		26-Aug-2022	----	----	
Radiological Parameters : Lead 210 in Water by Gas Flow Proportional Counting										
HDPE (nitric acid) GBL-2022-00001-017	Pb210	08-Aug-2022	----	----	----		26-Sep-2022	----	----	



Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Radiological Parameters : Radium 226 in Water by Alpha Spectrometry										
HDPE (nitric acid) GBL-2022-00001-009	Ra226	08-Aug-2022	----	----	----		26-Aug-2022	----	----	
Radiological Parameters : Radium 226 in Water by Alpha Spectrometry										
HDPE (nitric acid) GBL-2022-00001-010	Ra226	08-Aug-2022	----	----	----		26-Aug-2022	----	----	
Radiological Parameters : Radium 226 in Water by Alpha Spectrometry										
HDPE (nitric acid) GBL-2022-00001-013	Ra226	08-Aug-2022	----	----	----		26-Sep-2022	----	----	
Radiological Parameters : Radium 226 in Water by Alpha Spectrometry										
HDPE (nitric acid) GBL-2022-00001-015	Ra226	08-Aug-2022	----	----	----		26-Aug-2022	----	----	
Radiological Parameters : Radium 226 in Water by Alpha Spectrometry										
HDPE (nitric acid) GBL-2022-00001-017	Ra226	08-Aug-2022	----	----	----		26-Sep-2022	----	----	
Total Metals : Total Boron in Water by CRC ICPMS (Low level)										
HDPE total (nitric acid) GBL-2022-00001-005	E420.B-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Boron in Water by CRC ICPMS (Low level)										
HDPE total (nitric acid) GBL-2022-00001-006	E420.B-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Boron in Water by CRC ICPMS (Low level)										
HDPE total (nitric acid) GBL-2022-00001-007	E420.B-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Boron in Water by CRC ICPMS (Low level)										
HDPE total (nitric acid) GBL-2022-00001-008	E420.B-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓



Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total Boron in Water by CRC ICPMS (Low level)										
HDPE total (nitric acid) GBL-2022-00001-009	E420.B-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Boron in Water by CRC ICPMS (Low level)										
HDPE total (nitric acid) GBL-2022-00001-010	E420.B-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Boron in Water by CRC ICPMS (Low level)										
HDPE total (nitric acid) GBL-2022-00001-011	E420.B-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Boron in Water by CRC ICPMS (Low level)										
HDPE total (nitric acid) GBL-2022-00001-012	E420.B-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Boron in Water by CRC ICPMS (Low level)										
HDPE total (nitric acid) GBL-2022-00001-013	E420.B-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Boron in Water by CRC ICPMS (Low level)										
HDPE total (nitric acid) GBL-2022-00001-015	E420.B-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Boron in Water by CRC ICPMS (Low level)										
HDPE total (nitric acid) GBL-2022-00001-017	E420.B-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Boron in Water by CRC ICPMS (Low level)										
HDPE total (nitric acid) GBL-2022-00001-018 (Travel Blank)	E420.B-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Boron in Water by CRC ICPMS (Low level)										
HDPE total (nitric acid) GBL-2022-00001-022	E420.B-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total Boron in Water by CRC ICPMS (Low level)										
HDPE total (nitric acid) GBL-2022-00001-023	E420.B-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Boron in Water by CRC ICPMS (Low level)										
HDPE total (nitric acid) GBL-2022-00001-024	E420.B-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Boron in Water by CRC ICPMS (Low level)										
HDPE total (nitric acid) GBL-2022-00001-025	E420.B-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Boron in Water by CRC ICPMS (Low level)										
HDPE total (nitric acid) GBL-2022-00001-031	E420.B-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) GBL-2022-00001-005	E420.Cr-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) GBL-2022-00001-006	E420.Cr-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) GBL-2022-00001-007	E420.Cr-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) GBL-2022-00001-008	E420.Cr-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) GBL-2022-00001-009	E420.Cr-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓



Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) GBL-2022-00001-010	E420.Cr-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) GBL-2022-00001-011	E420.Cr-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) GBL-2022-00001-012	E420.Cr-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) GBL-2022-00001-013	E420.Cr-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) GBL-2022-00001-015	E420.Cr-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) GBL-2022-00001-017	E420.Cr-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) GBL-2022-00001-018 (Travel Blank)	E420.Cr-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) GBL-2022-00001-022	E420.Cr-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) GBL-2022-00001-023	E420.Cr-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓





Matrix: **Water**

Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) GBL-2022-00001-024	E420.Cr-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) GBL-2022-00001-025	E420.Cr-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) GBL-2022-00001-031	E420.Cr-L	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Mercury in Water by CVAAS										
HDPE GBL-2022-00001-006	E508	08-Aug-2022	13-Sep-2022	----	----		13-Sep-2022	0 days	35 days	✖
Total Metals : Total Mercury in Water by CVAAS										
HDPE GBL-2022-00001-008	E508	08-Aug-2022	13-Sep-2022	----	----		13-Sep-2022	0 days	35 days	✖
Total Metals : Total Mercury in Water by CVAAS										
HDPE GBL-2022-00001-005	E508	08-Aug-2022	13-Sep-2022	----	----		13-Sep-2022	0 days	36 days	✖
Total Metals : Total Mercury in Water by CVAAS										
HDPE GBL-2022-00001-007	E508	08-Aug-2022	13-Sep-2022	----	----		13-Sep-2022	0 days	36 days	✖
Total Metals : Total Mercury in Water by CVAAS										
HDPE GBL-2022-00001-009	E508	08-Aug-2022	13-Sep-2022	----	----		13-Sep-2022	0 days	36 days	✖
Total Metals : Total Mercury in Water by CVAAS										
HDPE GBL-2022-00001-010	E508	08-Aug-2022	13-Sep-2022	----	----		13-Sep-2022	0 days	36 days	✖



Matrix: **Water**

Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total Mercury in Water by CVAAS										
HDPE GBL-2022-00001-011	E508	08-Aug-2022	13-Sep-2022	----	----		13-Sep-2022	0 days	36 days	*
Total Metals : Total Mercury in Water by CVAAS										
HDPE GBL-2022-00001-012	E508	08-Aug-2022	13-Sep-2022	----	----		13-Sep-2022	0 days	36 days	*
Total Metals : Total Mercury in Water by CVAAS										
HDPE GBL-2022-00001-013	E508	08-Aug-2022	13-Sep-2022	----	----		13-Sep-2022	0 days	36 days	*
Total Metals : Total Mercury in Water by CVAAS										
HDPE GBL-2022-00001-015	E508	08-Aug-2022	13-Sep-2022	----	----		13-Sep-2022	0 days	36 days	*
Total Metals : Total Mercury in Water by CVAAS										
HDPE GBL-2022-00001-017	E508	08-Aug-2022	13-Sep-2022	----	----		13-Sep-2022	0 days	36 days	*
Total Metals : Total Mercury in Water by CVAAS										
HDPE GBL-2022-00001-018 (Travel Blank)	E508	08-Aug-2022	13-Sep-2022	----	----		13-Sep-2022	0 days	36 days	*
Total Metals : Total Mercury in Water by CVAAS										
HDPE GBL-2022-00001-022	E508	08-Aug-2022	13-Sep-2022	----	----		13-Sep-2022	0 days	36 days	*
Total Metals : Total Mercury in Water by CVAAS										
HDPE GBL-2022-00001-023	E508	08-Aug-2022	13-Sep-2022	----	----		13-Sep-2022	0 days	36 days	*
Total Metals : Total Mercury in Water by CVAAS										
HDPE GBL-2022-00001-024	E508	08-Aug-2022	13-Sep-2022	----	----		13-Sep-2022	0 days	36 days	*



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total Mercury in Water by CVAAS										
HDPE GBL-2022-00001-025	E508	08-Aug-2022	13-Sep-2022	----	----		13-Sep-2022	0 days	36 days	*
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) GBL-2022-00001-005	E420	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) GBL-2022-00001-006	E420	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) GBL-2022-00001-007	E420	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) GBL-2022-00001-008	E420	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) GBL-2022-00001-009	E420	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) GBL-2022-00001-010	E420	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) GBL-2022-00001-011	E420	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) GBL-2022-00001-012	E420	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) GBL-2022-00001-013	E420	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) GBL-2022-00001-015	E420	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) GBL-2022-00001-017	E420	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) GBL-2022-00001-018 (Travel Blank)	E420	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) GBL-2022-00001-022	E420	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) GBL-2022-00001-023	E420	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) GBL-2022-00001-024	E420	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) GBL-2022-00001-025	E420	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) GBL-2022-00001-031	E420	08-Aug-2022	18-Aug-2022	----	----		18-Aug-2022	180 days	10 days	✓



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE GBL-2022-00001-005	E395	08-Aug-2022	----	----	----		06-Sep-2022	7 days	29 days	<div>✖ EHT</div>
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE GBL-2022-00001-006	E395	08-Aug-2022	----	----	----		06-Sep-2022	7 days	29 days	<div>✖ EHT</div>
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE GBL-2022-00001-007	E395	08-Aug-2022	----	----	----		06-Sep-2022	7 days	29 days	<div>✖ EHT</div>
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE GBL-2022-00001-008	E395	08-Aug-2022	----	----	----		06-Sep-2022	7 days	29 days	<div>✖ EHT</div>
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE GBL-2022-00001-009	E395	08-Aug-2022	----	----	----		06-Sep-2022	7 days	29 days	<div>✖ EHT</div>
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE GBL-2022-00001-010	E395	08-Aug-2022	----	----	----		06-Sep-2022	7 days	29 days	<div>✖ EHT</div>
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE GBL-2022-00001-011	E395	08-Aug-2022	----	----	----		06-Sep-2022	7 days	29 days	<div>✖ EHT</div>
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE GBL-2022-00001-012	E395	08-Aug-2022	----	----	----		06-Sep-2022	7 days	29 days	<div>✖ EHT</div>
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE GBL-2022-00001-013	E395	08-Aug-2022	----	----	----		06-Sep-2022	7 days	29 days	<div>✖ EHT</div>





Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE GBL-2022-00001-015	E395	08-Aug-2022	----	----	----		06-Sep-2022	7 days	29 days	✖ EHT
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE GBL-2022-00001-017	E395	08-Aug-2022	----	----	----		06-Sep-2022	7 days	29 days	✖ EHT
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE GBL-2022-00001-018 (Travel Blank)	E395	08-Aug-2022	----	----	----		06-Sep-2022	7 days	29 days	✖ EHT
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE GBL-2022-00001-022	E395	08-Aug-2022	----	----	----		06-Sep-2022	7 days	29 days	✖ EHT
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE GBL-2022-00001-023	E395	08-Aug-2022	----	----	----		06-Sep-2022	7 days	29 days	✖ EHT
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE GBL-2022-00001-024	E395	08-Aug-2022	----	----	----		06-Sep-2022	7 days	29 days	✖ EHT
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE GBL-2022-00001-025	E395	08-Aug-2022	----	----	----		06-Sep-2022	7 days	29 days	✖ EHT
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) GBL-2022-00001-005	E611A	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✔
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) GBL-2022-00001-006	E611A	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) GBL-2022-00001-007	E611A	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) GBL-2022-00001-008	E611A	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) GBL-2022-00001-009	E611A	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) GBL-2022-00001-010	E611A	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) GBL-2022-00001-015	E611A	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) GBL-2022-00001-017	E611A	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) GBL-2022-00001-018 (Travel Blank)	E611A	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) GBL-2022-00001-022	E611A	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) GBL-2022-00001-023	E611A	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) GBL-2022-00001-024	E611A	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) GBL-2022-00001-025	E611A	08-Aug-2022	16-Aug-2022	----	----		17-Aug-2022	14 days	8 days	✓

Legend & Qualifier Definitions

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	603595	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	628177	1	17	5.8	5.0	✔
BTEX by Headspace GC-MS	E611A	605372	1	19	5.2	5.0	✔
Chloride in Water by IC	E235.Cl	603587	1	16	6.2	5.0	✔
Conductivity in Water	E100	603594	1	16	6.2	5.0	✔
Dissolved Boron in Water by CRC ICPMS (Low level)	E421.B-L	606679	1	15	6.6	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	606680	1	15	6.6	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	648044	2	32	6.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	606678	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	603816	1	16	6.2	5.0	✔
Fluoride in Water by IC	E235.F	603591	1	16	6.2	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	603588	1	17	5.8	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	603589	1	16	6.2	5.0	✔
pH by Meter	E108	603593	1	16	6.2	5.0	✔
Sulfate in Water by IC (Low Level)	E235.SO4-L	603590	1	16	6.2	5.0	✔
Total Boron in Water by CRC ICPMS (Low level)	E420.B-L	607796	1	17	5.8	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	607798	1	17	5.8	5.0	✔
Total Mercury in Water by CVAAS	E508	643825	2	28	7.1	5.0	✔
Total Metals in Water by CRC ICPMS	E420	607797	1	17	5.8	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	603817	1	16	6.2	5.0	✔
Total Sulfide by Colourimetry (Automated Flow)	E395	633847	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	603819	2	28	7.1	5.0	✔
Turbidity by Nephelometry	E121	630941	1	20	5.0	5.0	✔
VH and F1 by Headspace GC-FID	E581.VH+F1	605373	1	19	5.2	5.0	✔
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	603595	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	628177	1	17	5.8	5.0	✔
BTEX by Headspace GC-MS	E611A	605372	1	19	5.2	5.0	✔
CCME PHCs - F2-F4 by GC-FID	E601	609213	1	18	5.5	5.0	✔
Chloride in Water by IC	E235.Cl	603587	1	16	6.2	5.0	✔
Conductivity in Water	E100	603594	1	16	6.2	5.0	✔
Dissolved Boron in Water by CRC ICPMS (Low level)	E421.B-L	606679	1	15	6.6	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	606680	1	15	6.6	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	648044	2	32	6.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	606678	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	603816	1	16	6.2	5.0	✔
Fluoride in Water by IC	E235.F	603591	1	16	6.2	5.0	✔



Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Control Samples (LCS) - Continued							
Nitrate in Water by IC (Low Level)	E235.NO3-L	603588	1	17	5.8	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	603589	1	16	6.2	5.0	✔
Oil & Grease by Gravimetry	E567	609002	1	10	10.0	5.0	✔
pH by Meter	E108	603593	1	16	6.2	5.0	✔
Sulfate in Water by IC (Low Level)	E235.SO4-L	603590	1	16	6.2	5.0	✔
Total Boron in Water by CRC ICPMS (Low level)	E420.B-L	607796	1	17	5.8	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	607798	1	17	5.8	5.0	✔
Total Mercury in Water by CVAAS	E508	643825	2	28	7.1	5.0	✔
Total Metals in Water by CRC ICPMS	E420	607797	1	17	5.8	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	603817	1	16	6.2	5.0	✔
Total Sulfide by Colourimetry (Automated Flow)	E395	633847	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	603819	2	28	7.1	5.0	✔
Turbidity by Nephelometry	E121	630941	1	20	5.0	5.0	✔
VH and F1 by Headspace GC-FID	E581.VH+F1	605373	1	19	5.2	5.0	✔
Method Blanks (MB)							
Alkalinity Species by Titration	E290	603595	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	628177	1	17	5.8	5.0	✔
BTEX by Headspace GC-MS	E611A	605372	1	19	5.2	5.0	✔
CCME PHCs - F2-F4 by GC-FID	E601	609213	1	18	5.5	5.0	✔
Chloride in Water by IC	E235.Cl	603587	1	16	6.2	5.0	✔
Conductivity in Water	E100	603594	1	16	6.2	5.0	✔
Dissolved Boron in Water by CRC ICPMS (Low level)	E421.B-L	606679	1	15	6.6	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	606680	1	15	6.6	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	648044	2	32	6.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	606678	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	603816	1	16	6.2	5.0	✔
Fluoride in Water by IC	E235.F	603591	1	16	6.2	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	603588	1	17	5.8	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	603589	1	16	6.2	5.0	✔
Oil & Grease by Gravimetry	E567	609002	1	10	10.0	5.0	✔
Sulfate in Water by IC (Low Level)	E235.SO4-L	603590	1	16	6.2	5.0	✔
Total Boron in Water by CRC ICPMS (Low level)	E420.B-L	607796	1	17	5.8	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	607798	1	17	5.8	5.0	✔
Total Mercury in Water by CVAAS	E508	643825	2	28	7.1	5.0	✔
Total Metals in Water by CRC ICPMS	E420	607797	1	17	5.8	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	603817	1	16	6.2	5.0	✔
Total Sulfide by Colourimetry (Automated Flow)	E395	633847	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	603819	2	28	7.1	5.0	✔
Turbidity by Nephelometry	E121	630941	1	20	5.0	5.0	✔
VH and F1 by Headspace GC-FID	E581.VH+F1	605373	1	19	5.2	5.0	✔





Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	628177	1	17	5.8	5.0	✔
BTEX by Headspace GC-MS	E611A	605372	1	19	5.2	5.0	✔
Chloride in Water by IC	E235.Cl	603587	1	16	6.2	5.0	✔
Dissolved Boron in Water by CRC ICPMS (Low level)	E421.B-L	606679	1	15	6.6	5.0	✔
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	606680	1	15	6.6	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	648044	2	32	6.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	606678	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	603816	1	16	6.2	5.0	✔
Fluoride in Water by IC	E235.F	603591	1	16	6.2	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	603588	1	17	5.8	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	603589	1	16	6.2	5.0	✔
Sulfate in Water by IC (Low Level)	E235.SO4-L	603590	1	16	6.2	5.0	✔
Total Boron in Water by CRC ICPMS (Low level)	E420.B-L	607796	1	17	5.8	5.0	✔
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	607798	1	17	5.8	5.0	✔
Total Mercury in Water by CVAAS	E508	643825	2	28	7.1	5.0	✔
Total Metals in Water by CRC ICPMS	E420	607797	1	17	5.8	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	603817	1	16	6.2	5.0	✔
Total Sulfide by Colourimetry (Automated Flow)	E395	633847	1	20	5.0	5.0	✔
VH and F1 by Headspace GC-FID	E581.VH+F1	605373	1	19	5.2	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100  Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108  Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally $20 \pm 5^\circ\text{C}$ ). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121  Vancouver - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
TSS by Gravimetry	E160  Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at $104 \pm 1^\circ\text{C}$ , with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Chloride in Water by IC	E235.Cl  Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F  Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L  Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L  Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC (Low Level)	E235.SO4-L  Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290  Vancouver - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ammonia by Fluorescence	E298  Vancouver - Environmental	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L  Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L  Vancouver - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Sulfide by Colourimetry (Automated Flow)	E395  Vancouver - Environmental	Water	APHA 4500 -S E-Auto-Colorimetry	Sulfide is determined using the gas dialysis automated methylene blue colourimetric method. Results expressed "as H <sub>2</sub> S" if reported represent the maximum possible H <sub>2</sub> S concentration based on the total sulfide concentration in the sample. The H <sub>2</sub> S calculation converts Total Sulphide as (S <sub>2</sub> -) and reports it as Total Sulphide as (H <sub>2</sub> S)
Total Metals in Water by CRC ICPMS	E420  Edmonton - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Boron in Water by CRC ICPMS (Low level)	E420.B-L  Edmonton - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L  Edmonton - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421  Edmonton - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Boron in Water by CRC ICPMS (Low level)	E421.B-L  Edmonton - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L  Edmonton - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAAS	E508  Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509  Edmonton - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Oil & Grease by Gravimetry	E567  Vancouver - Environmental	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane and the extract is evaporated to dryness. The residue is then weighed to determine Oil and Grease.
VH and F1 by Headspace GC-FID	E581.VH+F1  Vancouver - Environmental	Water	BC MOE Lab Manual / CCME PHC in Soil - Tier 1 (mod)	Volatile Hydrocarbons (VH and F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
CCME PHCs - F2-F4 by GC-FID	E601  Vancouver - Environmental	Water	CCME PHC in Soil - Tier 1	Sample extracts are analyzed by GC-FID for CCME hydrocarbon fractions (F2-F4).
BTEX by Headspace GC-MS	E611A  Vancouver - Environmental	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
Hardness (Calculated) from Total Ca/Mg	EC100A  Edmonton - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
TDS in Water (Calculation)	EC103  Vancouver - Environmental	Water	APHA 1030E (mod)	Total Dissolved Solids is calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N  Vancouver - Environmental	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).
F1-BTEX	EC580  Vancouver - Environmental	Water	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Lead 210 in Water by Gas Flow Proportional Counting	Pb210  Saskatchewan Research Council - 143 - 111 Research Drive Saskatoon Saskatchewan Canada S7N 3R2	Water	See attached report.	See attached report.
Radium 226 in Water by Alpha Spectrometry	Ra226  Saskatchewan Research Council - 143 - 111 Research Drive Saskatoon Saskatchewan Canada S7N 3R2	Water		See attached report.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298  Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Preparation for Total Organic Carbon by Combustion	EP355  Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358  Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Dissolved Metals Water Filtration	EP421  Edmonton - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
Dissolved Mercury Water Filtration	EP509  Edmonton - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
Oil & Grease Extraction for Gravimetry	EP567  Vancouver - Environmental	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane by liquid-liquid extraction.
VOCs Preparation for Headspace Analysis	EP581  Vancouver - Environmental	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.



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Work Order : YL2201188  
Client : AECOM Canada Ltd.  
Project : ----



Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
PHCs and PAHs Hexane Extraction	EP601  Vancouver - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

## QUALITY CONTROL REPORT

**Work Order** : **YL2201188**  
**Client** : AECOM Canada Ltd.  
**Contact** : Jessica Stepney  
**Address** : 101 - 18817 Stony Plain Rd. NW  
 Edmonton AB Canada T5S 0C2  
**Telephone** : 780-486-5921  
**Project** : ----  
**PO** : ----  
**C-O-C number** : ----  
**Sampler** : Rebecca Hurtubise  
**Site** : ----  
**Quote number** : EO2022-AECO100-012 Great Bear Lake  
**No. of samples received** : 17  
**No. of samples analysed** : 17

**Page** : 1 of 19  
**Laboratory** : Yellowknife - Environmental  
**Account Manager** : Pamela Toledo  
**Address** : 314 Old Airport Road, Unit 116  
 Yellowknife, Northwest Territories Canada X1A 3T3  
**Telephone** : +1 867 873 5593  
**Date Samples Received** : 10-Aug-2022 16:00  
**Date Analysis Commenced** : 15-Aug-2022  
**Issue Date** : 28-Sep-2022 14:23

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Alex Thornton	Analyst	Vancouver Metals, Burnaby, British Columbia
Austin Wasylyshyn	Lab Analyst	Edmonton Metals, Edmonton, Alberta
Brandon Green	Lab Assistant	Edmonton Metals, Edmonton, Alberta
Dan Nguyen	Team Leader - Inorganics	Edmonton Metals, Edmonton, Alberta
Janice Leung	Supervisor - Organics Instrumentation	Vancouver Organics, Burnaby, British Columbia
Joan Wu	Lab Analyst	Edmonton Metals, Edmonton, Alberta
Kaitlyn Gardner	Account Manager Assistant	Saskatchewan Research Council External Subcontracting, Saskatoon, Saskatchewan
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Inorganics, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Paolo Obillo	Account Manager Assistant	Saskatchewan Research Council External Subcontracting, Saskatoon, Saskatchewan
Tracy Harley	Supervisor - Water Quality Instrumentation	Vancouver Inorganics, Burnaby, British Columbia



## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

# = Indicates a QC result that did not meet the ALS DQO.

## Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

### Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 603593)											
YL2201188-003	GBL-2022-00001-007	pH	----	E108	0.10	pH units	8.04	8.07	0.372%	4%	----
Physical Tests (QC Lot: 603594)											
YL2201188-003	GBL-2022-00001-007	conductivity	----	E100	1.0	µS/cm	157	160	1.39%	10%	----
Physical Tests (QC Lot: 603595)											
YL2201188-003	GBL-2022-00001-007	alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	61.8	61.6	0.324%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	61.8	61.6	0.324%	20%	----
Physical Tests (QC Lot: 603819)											
VA22B8885-005	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	3.8	3.2	0.6	Diff <2x LOR	----
Physical Tests (QC Lot: 604921)											
VA22B8475-002	Anonymous	solids, total suspended [TSS]	----	E160	5.0	mg/L	134	133	0.751%	20%	----
Physical Tests (QC Lot: 630941)											
YL2201188-001	GBL-2022-00001-005	turbidity	----	E121	0.10	NTU	0.59	0.62	0.03	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 603587)											
YL2201188-001	GBL-2022-00001-005	chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 603588)											
YL2201188-001	GBL-2022-00001-005	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 603589)											
YL2201188-001	GBL-2022-00001-005	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 603590)											
YL2201188-001	GBL-2022-00001-005	sulfate (as SO4)	14808-79-8	E235.SO4-L	0.050	mg/L	6.65	6.65	0.0433%	20%	----
Anions and Nutrients (QC Lot: 603591)											
YL2201188-001	GBL-2022-00001-005	fluoride	16984-48-8	E235.F	0.020	mg/L	0.120	0.117	0.004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 628177)											
YL2201188-001	GBL-2022-00001-005	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0104	0.0112	0.0008	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 603816)											
YL2201188-001	GBL-2022-00001-005	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	16.3	17.0	4.16%	20%	----
Organic / Inorganic Carbon (QC Lot: 603817)											
YL2201188-001	GBL-2022-00001-005	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	16.7	17.7	5.44%	20%	----
Total Sulfides (QC Lot: 633847)											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Sulfides (QC Lot: 633847) - continued											
YL2201188-012	GBL-2022-00001-018 (Travel Blank)	sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	<0.0015	0	Diff <2x LOR	----
Total Metals (QC Lot: 607796)											
YL2201188-001	GBL-2022-00001-005	boron, total	7440-42-8	E420.B-L	0.0020	mg/L	0.0058	0.0056	0.0002	Diff <2x LOR	----
Total Metals (QC Lot: 607797)											
YL2201188-001	GBL-2022-00001-005	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0203	0.0205	0.0002	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00015	0.00018	0.00002	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00620	0.00608	1.84%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.00639	0.00644	0.694%	20%	----
		beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000068	<0.0000050	0.0000018	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	18.7	18.8	0.171%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00013	0.00013	0.000002	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00248	0.00253	0.00005	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.043	0.042	0.00008	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000274	0.000265	0.000009	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0011	0.0011	0.00002	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	4.16	4.20	0.988%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00533	0.00536	0.642%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000564	0.000596	5.54%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00070	0.00070	0.00001	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.650	0.650	0.0226%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00155	0.00153	0.00002	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000057	0.000078	0.000021	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	0.50	0.50	0.003	Diff <2x LOR	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.050	mg/L	1.38	1.37	1.15%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0232	0.0232	0.416%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	2.67	2.88	0.20	Diff <2x LOR	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		thorium, total	7440-29-1	E420	0.00010	mg/L	0.00012	0.00019	0.00007	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----





Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 607797) - continued											
YL2201188-001	GBL-2022-00001-005	titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000141	0.000144	1.83%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00061	0.00061	0.000004	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0030	<0.0030	0.00004	Diff <2x LOR	----
		zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Total Metals (QC Lot: 607798)											
YL2201188-001	GBL-2022-00001-005	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00016	0.00018	0.00002	Diff <2x LOR	----
Total Metals (QC Lot: 643825)											
FJ2202432-010	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000060	0.0000082	0.0000022	Diff <2x LOR	----
Total Metals (QC Lot: 643826)											
YL2201188-009	GBL-2022-00001-013	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 606678)											
EO2206559-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.952	0.999	4.89%	20%	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00016	0.00016	0.000006	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00073	0.00075	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0174	0.0175	0.682%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	0.000033	0.000038	0.000005	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.051	0.052	0.0007	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000394	0.0000355	0.0000038	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	4.86	4.83	0.464%	20%	----
		cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000029	0.000032	0.000004	Diff <2x LOR	----
		chromium, dissolved	7440-47-3	E421	0.00050	mg/L	0.00186	0.00188	0.00002	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00156	0.00154	1.36%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00411	0.00400	2.67%	20%	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.534	0.536	0.496%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000218	0.000220	0.000003	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	1.92	1.90	1.21%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0897	0.0879	2.00%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00292	0.00287	1.94%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00741	0.00714	3.74%	20%	----
		phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.118	0.124	0.006	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Dissolved Metals (QC Lot: 606678) - continued											
EO2206559-001	Anonymous	rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00050	0.00057	0.00007	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000511	0.000514	0.704%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	10.2	10.2	0.584%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000012	0.000012	0.0000009	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.050	mg/L	52.6	50.7	3.56%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0554	0.0558	0.654%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	7.78	7.37	5.35%	20%	----
		tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		thorium, dissolved	7440-29-1	E421	0.00010	mg/L	0.00043	0.00042	0.00001	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.0200	0.0205	2.71%	20%	----
		tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000289	0.000294	1.59%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.162	0.160	1.07%	20%	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0018	0.0019	0.0001	Diff <2x LOR	----
		zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	0.00497	0.00503	1.20%	20%	----
Dissolved Metals (QC Lot: 606679)											
YL2201188-001	GBL-2022-00001-005	boron, dissolved	7440-42-8	E421.B-L	0.0020	mg/L	0.0064	0.0061	0.0003	Diff <2x LOR	----
Dissolved Metals (QC Lot: 606680)											
YL2201188-001	GBL-2022-00001-005	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 648044)											
EO2207621-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 648045)											
YL2201188-006	GBL-2022-00001-010	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 605372)											
WR2200849-011	Anonymous	benzene	71-43-2	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		ethylbenzene	100-41-4	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		toluene	108-88-3	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		xylene, m+p-	179601-23-1	E611A	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611A	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 605373)											
WR2200849-011	Anonymous	F1 (C6-C10)	----	E581.VH+F1	100	µg/L	<100	<100	0.0%	30%	----

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 603594)						
conductivity	----	E100	1	µS/cm	1.3	----
Physical Tests (QCLot: 603595)						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	1.3	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	1.3	----
Physical Tests (QCLot: 603819)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 604921)						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 630941)						
turbidity	----	E121	0.1	NTU	<0.10	----
Anions and Nutrients (QCLot: 603587)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 603588)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 603589)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 603590)						
sulfate (as SO4)	14808-79-8	E235.SO4-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 603591)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 628177)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Organic / Inorganic Carbon (QCLot: 603816)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 603817)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Sulfides (QCLot: 633847)						
sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	----
Total Metals (QCLot: 607796)						
boron, total	7440-42-8	E420.B-L	0.002	mg/L	<0.0020	----
Total Metals (QCLot: 607797)						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 607797) - continued</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 607797) - continued</b>						
zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
<b>Total Metals (QCLot: 607798)</b>						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
<b>Total Metals (QCLot: 643825)</b>						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
<b>Total Metals (QCLot: 643826)</b>						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 606678)</b>						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----





Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 606678) - continued</b>						
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----
<b>Dissolved Metals (QCLot: 606679)</b>						
boron, dissolved	7440-42-8	E421.B-L	0.002	mg/L	<0.0020	----
<b>Dissolved Metals (QCLot: 606680)</b>						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
<b>Dissolved Metals (QCLot: 648044)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 648045)</b>						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Aggregate Organics (QCLot: 609002)</b>						
oil & grease (gravimetric)	----	E567	5	mg/L	<5.0	----
<b>Volatile Organic Compounds (QCLot: 605372)</b>						
benzene	71-43-2	E611A	0.5	µg/L	<0.50	----
ethylbenzene	100-41-4	E611A	0.5	µg/L	<0.50	----
toluene	108-88-3	E611A	0.5	µg/L	<0.50	----
xylene, m+p-	179601-23-1	E611A	0.4	µg/L	<0.40	----
xylene, o-	95-47-6	E611A	0.3	µg/L	<0.30	----
<b>Hydrocarbons (QCLot: 605373)</b>						
F1 (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
<b>Hydrocarbons (QCLot: 609213)</b>						
F2 (C10-C16)	----	E601	100	µg/L	<100	----
F3 (C16-C34)	----	E601	250	µg/L	<250	----
F4 (C34-C50)	----	E601	250	µg/L	<250	----

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Water

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					<i>Spike</i>	<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Concentration</i>	<i>LCS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
Physical Tests (QCLOT: 603593)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLOT: 603594)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	93.3	90.0	110	----
Physical Tests (QCLOT: 603595)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	108	85.0	115	----
Physical Tests (QCLOT: 603819)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	94.7	85.0	115	----
Physical Tests (QCLOT: 604921)									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	94.3	85.0	115	----
Physical Tests (QCLOT: 630941)									
turbidity	----	E121	0.1	NTU	200 NTU	102	85.0	115	----
Anions and Nutrients (QCLOT: 603587)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	100	90.0	110	----
Anions and Nutrients (QCLOT: 603588)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLOT: 603589)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.9	90.0	110	----
Anions and Nutrients (QCLOT: 603590)									
sulfate (as SO4)	14808-79-8	E235.SO4-L	0.05	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLOT: 603591)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.4	90.0	110	----
Anions and Nutrients (QCLOT: 628177)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	100	85.0	115	----
Organic / Inorganic Carbon (QCLOT: 603816)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	96.9	80.0	120	----
Organic / Inorganic Carbon (QCLOT: 603817)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	103	80.0	120	----
Total Sulfides (QCLOT: 633847)									
sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	0.08 mg/L	95.7	80.0	120	----
Total Metals (QCLOT: 607796)									



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 607796) - continued									
boron, total	7440-42-8	E420.B-L	0.002	mg/L	1 mg/L	94.5	80.0	120	----
Total Metals (QCLot: 607797)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	102	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	97.3	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	108	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	105	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	101	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	97.3	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	109	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	99.5	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	106	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	92.4	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	98.7	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	100	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	91.6	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	99.8	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	89.7	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	95.2	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	98.3	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	100	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 607797) - continued									
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	97.2	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	89.0	80.0	120	----
Total Metals (QCLot: 607798)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Total Metals (QCLot: 643825)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	100.0	80.0	120	----
Total Metals (QCLot: 643826)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	99.5	80.0	120	----
Dissolved Metals (QCLot: 606678)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	103	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	92.9	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	96.3	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	106	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	98.6	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	96.1	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	107	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.4	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	104	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	98.1	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	106	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	88.0	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	102	80.0	120	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 606678) - continued									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	92.2	80.0	120	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	91.0	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	94.3	80.0	120	----
tin, dissolved	7440-31-5	E421	----	mg/L	0.5 mg/L	95.5	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	103	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	106	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.2	80.0	120	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	88.0	80.0	120	----
Dissolved Metals (QCLot: 606679)									
boron, dissolved	7440-42-8	E421.B-L	0.002	mg/L	1 mg/L	98.6	80.0	120	----
Dissolved Metals (QCLot: 606680)									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	96.7	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	94.1	80.0	120	----
Aggregate Organics (QCLot: 609002)									
oil & grease (gravimetric)	----	E567	5	mg/L	100 mg/L	95.6	70.0	130	----
Volatile Organic Compounds (QCLot: 605372)									
benzene	71-43-2	E611A	0.5	µg/L	100 µg/L	93.8	70.0	130	----
ethylbenzene	100-41-4	E611A	0.5	µg/L	100 µg/L	102	70.0	130	----
toluene	108-88-3	E611A	0.5	µg/L	100 µg/L	102	70.0	130	----
xylene, m+p-	179601-23-1	E611A	0.4	µg/L	200 µg/L	118	70.0	130	----
xylene, o-	95-47-6	E611A	0.3	µg/L	100 µg/L	99.6	70.0	130	----
Hydrocarbons (QCLot: 605373)									
F1 (C6-C10)	----	E581.VH+F1	100	µg/L	6310 µg/L	97.0	70.0	130	----
Hydrocarbons (QCLot: 609213)									
F2 (C10-C16)	----	E601	100	µg/L	3538 µg/L	113	70.0	130	----
F3 (C16-C34)	----	E601	250	µg/L	7053 µg/L	101	70.0	130	----
F4 (C34-C50)	----	E601	250	µg/L	5051 µg/L	98.9	70.0	130	----





A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1 \times$  spike level.

Sub-Matrix: Water					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 603587)										
YL2201188-002	GBL-2022-00001-006	chloride	16887-00-6	E235.Cl	95.9 mg/L	100 mg/L	95.9	75.0	125	----
Anions and Nutrients (QCLot: 603588)										
YL2201188-002	GBL-2022-00001-006	nitrate (as N)	14797-55-8	E235.NO3-L	2.43 mg/L	2.5 mg/L	97.3	75.0	125	----
Anions and Nutrients (QCLot: 603589)										
YL2201188-002	GBL-2022-00001-006	nitrite (as N)	14797-65-0	E235.NO2-L	0.467 mg/L	0.5 mg/L	93.4	75.0	125	----
Anions and Nutrients (QCLot: 603590)										
YL2201188-002	GBL-2022-00001-006	sulfate (as SO4)	14808-79-8	E235.SO4-L	96.2 mg/L	100 mg/L	96.2	75.0	125	----
Anions and Nutrients (QCLot: 603591)										
YL2201188-002	GBL-2022-00001-006	fluoride	16984-48-8	E235.F	0.991 mg/L	1 mg/L	99.1	75.0	125	----
Anions and Nutrients (QCLot: 628177)										
YL2201188-002	GBL-2022-00001-006	ammonia, total (as N)	7664-41-7	E298	0.105 mg/L	0.1 mg/L	105	75.0	125	----
Organic / Inorganic Carbon (QCLot: 603816)										
YL2201188-002	GBL-2022-00001-006	carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	5 mg/L	ND	70.0	130	----
Organic / Inorganic Carbon (QCLot: 603817)										
YL2201188-002	GBL-2022-00001-006	carbon, total organic [TOC]	----	E355-L	ND mg/L	5 mg/L	ND	70.0	130	----
Total Sulfides (QCLot: 633847)										
YL2201188-016	GBL-2022-00001-025	sulfide, total (as S)	18496-25-8	E395	0.226 mg/L	0.2 mg/L	113	75.0	125	----
Total Metals (QCLot: 607796)										
YL2201188-002	GBL-2022-00001-006	boron, total	7440-42-8	E420.B-L	0.0946 mg/L	0.1 mg/L	94.6	70.0	130	----
Total Metals (QCLot: 607797)										
YL2201188-002	GBL-2022-00001-006	aluminum, total	7429-90-5	E420	0.190 mg/L	0.2 mg/L	95.2	70.0	130	----
		antimony, total	7440-36-0	E420	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		barium, total	7440-39-3	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0422 mg/L	0.04 mg/L	106	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0108 mg/L	0.01 mg/L	108	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00383 mg/L	0.004 mg/L	95.8	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cesium, total	7440-46-2	E420	0.0101 ma/L	0.01 ma/L	101	70.0	130	----

Sub-Matrix: **Water**

Sub-Matrix: Water					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 607797) - continued										
YL2201188-002	GBL-2022-00001-006	cobalt, total	7440-48-4	E420	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		copper, total	7440-50-8	E420	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		iron, total	7439-89-6	E420	2.00 mg/L	2 mg/L	100	70.0	130	----
		lead, total	7439-92-1	E420	0.0199 mg/L	0.02 mg/L	99.5	70.0	130	----
		lithium, total	7439-93-2	E420	0.0975 mg/L	0.1 mg/L	97.5	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0235 mg/L	0.02 mg/L	118	70.0	130	----
		nickel, total	7440-02-0	E420	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		phosphorus, total	7723-14-0	E420	10.0 mg/L	10 mg/L	100	70.0	130	----
		potassium, total	7440-09-7	E420	3.90 mg/L	4 mg/L	97.6	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		selenium, total	7782-49-2	E420	0.0415 mg/L	0.04 mg/L	104	70.0	130	----
		silicon, total	7440-21-3	E420	9.73 mg/L	10 mg/L	97.3	70.0	130	----
		silver, total	7440-22-4	E420	0.00397 mg/L	0.004 mg/L	99.2	70.0	130	----
		sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	19.8 mg/L	20 mg/L	99.0	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0382 mg/L	0.04 mg/L	95.4	70.0	130	----
		thallium, total	7440-28-0	E420	0.00372 mg/L	0.004 mg/L	92.9	70.0	130	----
		thorium, total	7440-29-1	E420	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		tin, total	7440-31-5	E420	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	----
		titanium, total	7440-32-6	E420	0.0399 mg/L	0.04 mg/L	99.9	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0220 mg/L	0.02 mg/L	110	70.0	130	----
		uranium, total	7440-61-1	E420	0.00382 mg/L	0.004 mg/L	95.5	70.0	130	----
		vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.387 mg/L	0.4 mg/L	96.7	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0415 mg/L	0.04 mg/L	104	70.0	130	----
Total Metals (QCLot: 607798)										
YL2201188-002	GBL-2022-00001-006	chromium, total	7440-47-3	E420.Cr-L	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
Total Metals (QCLot: 643825)										
KS2203354-001	Anonymous	mercury, total	7439-97-6	E508	0.0000971 mg/L	0.0001 mg/L	97.1	70.0	130	----
Total Metals (QCLot: 643826)										
YL2201188-010	GBL-2022-00001-015	mercury, total	7439-97-6	E508	0.0000974 mg/L	0.0001 mg/L	97.4	70.0	130	----
Dissolved Metals (QCLot: 606678)										



Sub-Matrix: Water					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	
Dissolved Metals (QCLot: 606678) - continued										
EO2206559-002	Anonymous	aluminum, dissolved	7429-90-5	E421	ND mg/L	0.2 mg/L	ND	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0227 mg/L	0.02 mg/L	113	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0222 mg/L	0.02 mg/L	111	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0434 mg/L	0.04 mg/L	108	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0107 mg/L	0.01 mg/L	107	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.109 mg/L	0.1 mg/L	109	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00438 mg/L	0.004 mg/L	110	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cesium, dissolved	7440-46-2	E421	0.0109 mg/L	0.01 mg/L	109	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0452 mg/L	0.04 mg/L	113	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0209 mg/L	0.02 mg/L	104	70.0	130	----
		iron, dissolved	7439-89-6	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0219 mg/L	0.02 mg/L	110	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	11.4 mg/L	10 mg/L	114	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		rubidium, dissolved	7440-17-7	E421	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0463 mg/L	0.04 mg/L	116	70.0	130	----
		silicon, dissolved	7440-21-3	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	21.9 mg/L	20 mg/L	109	70.0	130	----
		tellurium, dissolved	13494-80-9	E421	0.0434 mg/L	0.04 mg/L	109	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00405 mg/L	0.004 mg/L	101	70.0	130	----
		thorium, dissolved	7440-29-1	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0222 mg/L	0.02 mg/L	111	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0441 mg/L	0.04 mg/L	110	70.0	130	----
		tungsten, dissolved	7440-33-7	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00424 mg/L	0.004 mg/L	106	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.408 mg/L	0.4 mg/L	102	70.0	130	----



Sub-Matrix: Water					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 606678) - continued										
EO2206559-002	Anonymous	zirconium, dissolved	7440-67-7	E421	0.0456 mg/L	0.04 mg/L	114	70.0	130	----
Dissolved Metals (QCLot: 606679)										
YL2201188-002	GBL-2022-00001-006	boron, dissolved	7440-42-8	E421.B-L	0.104 mg/L	0.1 mg/L	104	70.0	130	----
Dissolved Metals (QCLot: 606680)										
YL2201188-002	GBL-2022-00001-006	chromium, dissolved	7440-47-3	E421.Cr-L	0.0441 mg/L	0.04 mg/L	110	70.0	130	----
Dissolved Metals (QCLot: 648044)										
YL2201188-002	GBL-2022-00001-006	mercury, dissolved	7439-97-6	E509	0.000103 mg/L	0.0001 mg/L	103	70.0	130	----
Dissolved Metals (QCLot: 648045)										
YL2201188-007	GBL-2022-00001-011	mercury, dissolved	7439-97-6	E509	0.0000944 mg/L	0.0001 mg/L	94.4	70.0	130	----
Volatile Organic Compounds (QCLot: 605372)										
WR2200849-011	Anonymous	benzene	71-43-2	E611A	95.8 µg/L	100 µg/L	95.8	60.0	140	----
		ethylbenzene	100-41-4	E611A	98.0 µg/L	100 µg/L	98.0	60.0	140	----
		toluene	108-88-3	E611A	100 µg/L	100 µg/L	100	60.0	140	----
		xylene, m+p-	179601-23-1	E611A	217 µg/L	200 µg/L	108	60.0	140	----
		xylene, o-	95-47-6	E611A	97.8 µg/L	100 µg/L	97.8	60.0	140	----
Hydrocarbons (QCLot: 605373)										
WR2200849-012	Anonymous	F1 (C6-C10)	----	E581.VH+F1	5860 µg/L	6310 µg/L	92.8	60.0	140	----



SRC Group # 2022-9882

Sep 20, 2022

ALS  
314 Old Airport Road, Unit 116  
Yellowknife, NT X1A 3T3  
Attn: Dana Brown

Date Samples Received: Aug-18-2022

Client P.O.: YL2201188

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All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Section 4 approved by Philibert, Kelcey

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- \* Test methods and data are validated by the laboratory's Quality Assurance Program.
- \* Routine methods follow recognized procedures from sources such as
  - \* Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
  - \* Environment Canada
  - \* US EPA
  - \* CANMET
- \* The results reported relate only to the test samples as provided by the client. Results apply to the sample as received, unless otherwise indicated.
- \* Data marked as "by Client" has been provided by the client and may affect the validity of results.
- \* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.
- \* Additional information is available upon request.
- \* Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

This is a final report.

**SRC Group # 2022-9882**

Sep 20, 2022

ALS

314 Old Airport Road, Unit 116  
Yellowknife, NT X1A 3T3  
Attn: Dana Brown

Sample #: **2022032159**  
Date Sampled: **Aug 08, 2022**  
Sample Matrix: **WATER**  
Description: **08/08/2022 13:30 GBL-2022-00001-013 YL2201188-009**

Client PO #: **YL2201188**  
Date Received: **Aug 18, 2022**

Analyte	Units	Result
<b>Lab Section 4</b>		
Lead-210	Bq/L	<0.02
Radium-228	Bq/L	<0.3

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 14.6 °C upon receipt.

SRC Group # 2022-9882

Sep 20, 2022

ALS

Sample #: **2022032160**  
Date Sampled: **Aug 08, 2022**  
Sample Matrix: **WATER**  
Description: **08/08/2022 14:30 GBL-2022-00001-017 YL2201188-011**

Client PO #: **YL2201188**  
Date Received: **Aug 18, 2022**

Analyte	Units	Result
<b>Lab Section 4</b>		
Lead-210	Bq/L	<0.02
Radium-228	Bq/L	<0.2

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 14.6 °C upon receipt.

**SRC Group # 2022-9882**

Sep 20, 2022

ALS

**Analyte Methods**

<b>Name</b>	<b>Units</b>	<b>Method</b>
Lead-210	Bq/L	Rad-101
Radium-228	Bq/L	Rad-114

SRC Group # 2022-9883

Aug 29, 2022

ALS  
314 Old Airport Road, Unit 116  
Yellowknife, NT X1A 3T3  
Attn: Pamela Toledo

Date Samples Received: Aug-18-2022

Client P.O.: YL2201188

---

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Section 4 approved by Smith-Windsor, Jenna

- 
- \* Test methods and data are validated by the laboratory's Quality Assurance Program.
  - \* Routine methods follow recognized procedures from sources such as
    - \* Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    - \* Environment Canada
    - \* US EPA
    - \* CANMET
  - \* The results reported relate only to the test samples as provided by the client. Results apply to the sample as received, unless otherwise indicated.
  - \* Data marked as "by Client" has been provided by the client and may affect the validity of results.
  - \* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.
  - \* Additional information is available upon request.
  - \* Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

This is a final report.



**SRC Group # 2022-9883**

Aug 29, 2022

ALS

314 Old Airport Road, Unit 116  
Yellowknife, NT X1A 3T3  
Attn: Pamela Toledo

Sample #: **2022032241**  
Date Sampled: **Aug 08, 2022**  
Sample Matrix: **WATER**  
Description: **08/08/2022 15:23 GBL-2022-00001-009 YL2201188-005**

Client PO #: **YL2201188**  
Date Received: **Aug 18, 2022**

Analyte	Units	Result
<b>Lab Section 4</b>		
Lead-210	Bq/L	0.04
Radium-226	Bq/L	0.08

The temperature of the cooler was 14.6 °C upon receipt.

SRC Group # 2022-9883

Aug 29, 2022

ALS

Sample #: **2022032242**  
Date Sampled: **Aug 08, 2022**  
Sample Matrix: **WATER**  
Description: **08/08/2022 14:43 GBL-2022-00001-010 YL2201188-006**

Client PO #: **YL2201188**  
Date Received: **Aug 18, 2022**

Analyte	Units	Result
<b>Lab Section 4</b>		
Lead-210	Bq/L	0.02
Radium-226	Bq/L	<0.005

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 14.6 °C upon receipt.

**SRC Group # 2022-9883**

Aug 29, 2022

ALS

Sample #: **2022032243**  
Date Sampled: **Aug 08, 2022**  
Sample Matrix: **WATER**  
Description: **08/08/2022 15:00 GBL-2022-00001-015 YL2201188-010**

Client PO #: **YL2201188**  
Date Received: **Aug 18, 2022**

Analyte	Units	Result
<b>Lab Section 4</b>		
Lead-210	Bq/L	0.07
Radium-226	Bq/L	0.09

The temperature of the cooler was 14.6 °C upon receipt.

**SRC Group # 2022-9883**

Aug 29, 2022

ALS

**Analyte Methods**

<b>Name</b>	<b>Units</b>	<b>Method</b>
Lead-210	Bq/L	Rad-101
Radium-226	Bq/L	Rad-105

Sep 20, 2022

This report was generated for samples included in SRC Group # 2022-9882

## Quality Control Report

Dana Brown  
ALS  
314 Old Airport Road, Unit 116  
Yellowknife, NT X1A 3T3

### Reference Materials and Standards:

A reference material of known concentration is used whenever possible as either a control sample or control standard and analyzed with each batch of samples. These "QC" results are used to assess the performance of the method and must be within clearly defined limits; otherwise corrective action is required.

QC Analysis	Units	Target Value	Obtained Value
Lead-210	Bq/L	21.6	20.3
Lead-210	Bq	0.351	0.420
Radium-228	Bq/L	0.81	0.72
Radium-228	Bq/L	1.0	0.97

### Duplicates:

Duplicates are used to assess problems with precision and help ensure that samples within a given batch were processed appropriately. The difference between duplicates must be within strict limits, otherwise corrective action is required. Please note, the duplicate(s) in this report are duplicates analyzed within a given batch of test samples and may not be from this specific group of samples.

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Lead-210	Bq/L	32193	<0.02	<0.02
Radium-228	Bq/L	32411	<0.1	0.1

All quality control results were within the specified limits and considered acceptable.

Approved by Section Supervisor



Aug 29, 2022

This report was generated for samples included in SRC Group # 2022-9883

## Quality Control Report

Pamela Toledo  
ALS  
314 Old Airport Road, Unit 116  
Yellowknife, NT X1A 3T3

### Reference Materials and Standards:

A reference material of known concentration is used whenever possible as either a control sample or control standard and analyzed with each batch of samples. These "QC" results are used to assess the performance of the method and must be within clearly defined limits; otherwise corrective action is required.

QC Analysis	Units	Target Value	Obtained Value
Lead-210	Bq/L	21.6	20.3
Lead-210	Bq	0.351	0.420
Radium-226	Bq/L	19.8	18.0
Radium-226	Bq	0.043	0.045

### Duplicates:

Duplicates are used to assess problems with precision and help ensure that samples within a given batch were processed appropriately. The difference between duplicates must be within strict limits, otherwise corrective action is required. Please note, the duplicate(s) in this report are duplicates analyzed within a given batch of test samples and may not be from this specific group of samples.

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Lead-210	Bq/L	32193	<0.02	<0.02
Radium-226	Bq/L	32187	<0.005	0.03

All quality control results were within the specified limits and considered acceptable.

Approved by Section Supervisor



**Canada Toll Free: 1 800 668 9878**

<b>Report To</b> Company: AECOM Contact: Jessica Stepney Phone: 780-298-6562 Street: 101-18817 Stony Plain Rd. NW City/Province: Edmonton, AB Postal Code: T5S 0C2		<b>Reports / Recipients</b> Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL) Merge QC/QCI Reports with COA <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: Jessica.Stepney@aecom.com Email 2: rebecca.hurtubise@aecom.com Email 3:		<b>Turnaround Time (TAT) Requested</b> <input checked="" type="checkbox"/> Routine [R] if received by 3pm M-F - no surcharges apply <input type="checkbox"/> 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum <input type="checkbox"/> 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum <input type="checkbox"/> 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum <input type="checkbox"/> 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum <input type="checkbox"/> Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests. Date and Time Required for all E&P TATs:		<b>Analysis Request</b> Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below ROUTINE TOTAL METALS DISSOLVED METALS TOC DOC TSS BTX, F1-F4 OIL & GREASE RADIUM 226 Pb 210 SAMPLES ON HOLD EXTENDED STORAGE REQUIRED SUSPECTED HAZARD (see notes)	
<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Copy of Invoice with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Company: Contact:		<b>Invoice Recipients</b> Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: Jessica.Stepney@aecom.com Email 2: Email 3:		<b>Project Information</b> ALS Account # / Quote #: EO22-AECO100-012 Great Bear Lake Job #: 60662734 PO / AFE: LSD:			
<b>ALS Lab Work Order # (ALS use only):</b>		<b>ALS Contact:</b> Pamela Toledo		<b>Sampler:</b> R. Hurtubise			
<b>ALS Sample # (ALS use only)</b>		<b>Sample Identification and/or Coordinates</b> (This description will appear on the report)		<b>Date</b> (dd-mmm-yy)			
<b>Time</b> (hh:mm)		<b>Sample Type</b>		<b>NUMBER OF CONTAINERS</b>			
GBL-2022-00001-001				ROUTINE TOTAL METALS DISSOLVED METALS TOC DOC TSS BTX, F1-F4 OIL & GREASE RADIUM 226 Pb 210			
GBL-2022-00001-002				ROUTINE TOTAL METALS DISSOLVED METALS TOC DOC TSS BTX, F1-F4 OIL & GREASE RADIUM 226 Pb 210			
GBL-2022-00001-003				ROUTINE TOTAL METALS DISSOLVED METALS TOC DOC TSS BTX, F1-F4 OIL & GREASE RADIUM 226 Pb 210			
GBL-2022-00001-004				ROUTINE TOTAL METALS DISSOLVED METALS TOC DOC TSS BTX, F1-F4 OIL & GREASE RADIUM 226 Pb 210			
GBL-2022-00001-005		08-Aug-22		18:15 Water 10			
GBL-2022-00001-006				18:52 10			
GBL-2022-00001-007				18:03 10			
GBL-2022-00001-008				19:00 10			
GBL-2022-00001-009				14:23 10			
GBL-2022-00001-010				13:43 10			
GBL-2022-00001-011				15:10 5			
GBL-2022-00001-012				16:10 6			
<b>Drinking Water (DW) Samples (client use)</b> Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		<b>Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)</b>		<b>SAMPLE RECEIPT DETAILS (ALS use only)</b> Cooling Method: <input type="checkbox"/> NONE <input type="checkbox"/> ICE <input type="checkbox"/> ICE PACKS <input type="checkbox"/> FROZEN <input type="checkbox"/> COOLING INITIATED Submission Comments identified on Sample Receipt Notification: <input type="checkbox"/> YES <input type="checkbox"/> NO Cooler Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A Sample Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C			
<b>SHIPMENT RELEASE (client use)</b> Released by: Rebecca Hurtubise Date: Aug 9, 8:30 am Time:		<b>INITIAL SHIPMENT RECEPTION (ALS use only)</b> Received by: [Signature] Date: Aug 10/22 Time: 8:30		<b>FINAL SHIPMENT RECEPTION (ALS use only)</b> Received by: Date: Time:			
<b>RETURN TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION</b> To complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees to the Terms and Conditions as specified on the back page of the white - report copy. Any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.							



## COC Number: 22 -

Page 1 of 2

**Canada Toll Free: 1 800 668 9878**

<b>Report To</b> Contact and company name below will appear on the final report			<b>Reports / Recipients</b>			<b>Turnaround Time (TAT) Requested</b>			<b>AFFIX ALS BARCODE LABEL HERE</b> (ALS use only)								
Company: AECOM			Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			<input checked="" type="checkbox"/> Routine [R] if received by 3pm M-F - no surcharges apply											
Contact: Jessica Stepney			Merge QC/QCI Reports with COA <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A			<input type="checkbox"/> 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum											
Phone: 780-298-6562			<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			<input type="checkbox"/> 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum											
Company address below will appear on the final report			Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			<input type="checkbox"/> 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum											
Street: 101-18817 Stony Plain Rd. NW			Email 1 or Fax Jessica.Stepney@aecom.com			<input type="checkbox"/> 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum											
City/Province: Edmonton, AB			Email 2 rebecca.hurtubise@aecom.com			<input type="checkbox"/> Same day [E2] if received by 10am M-S - 200% rush surcharge.											
Postal Code: T5S 0C2			Email 3			Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.											
<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			<b>Invoice Recipients</b>			<b>Date and Time Required for all E&amp;P TATs:</b>			Minimum 48 hours advance								
Copy of Invoice with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			For all tests with rush TATs requested, please contact your AM to confirm availability.											
Company:			Email 1 or Fax Jessica.Stepney@aecom.com			<b>Analysis Request</b>											
Contact:			Email 2			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below											
<b>Project Information</b>			<b>Oil and Gas Required Fields (client use)</b>			<b>NUMBER OF CONTAINERS</b>											
ALS Account # / Quote #: EO22-AECO100-012 Great Bear Lake			AFE/Cost Center: PO#														
Job #: 60662734			Major/Minor Code: Routing Code:			Routine Total Metals Dissolved Metals TOC DOC TSS BTEX, F1-F4 Oil & Grease Radium 226 Pb 210											
PO / AFE:			Requisitioner:														
LSD:			Location:			<b>SAMPLES ON HOLD</b> <b>EXTENDED STORAGE REQUIRED</b> <b>SUSPECTED HAZARD (see notes)</b>											
ALS Lab Work Order # (ALS use only):			ALS Contact: Pamela Toledo Sampler: R. Hurtubise														
<b>ALS Sample #</b> (ALS use only)			<b>Sample Identification and/or Coordinates</b> (This description will appear on the report)			<b>Date</b> (dd-mm-yy)			<b>Time</b> (hh:mm)			<b>Sample Type</b>					
GBL-2022-00001-001																	
GBL-2022-00001-002																	
GBL-2022-00001-003																	
GBL-2022-00001-004																	
GBL-2022-00001-005						08-Aug-22			18:15			Water					
GBL-2022-00001-006									18:52								
GBL-2022-00001-007									18:03								
GBL-2022-00001-008									19:00								
GBL-2022-00001-009									14:23								
GBL-2022-00001-010									13:43								
GBL-2022-00001-011									15:10								
GBL-2022-00001-012									16:10								
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>			<b>Notes / Specify Limits for result evaluation by selecting from drop-down below</b> (Excel COC only)									<b>SAMPLE RECEIPT DETAILS (ALS use only)</b>					
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO												Cooling Method: <input type="checkbox"/> NONE <input type="checkbox"/> ICE <input type="checkbox"/> ICE PACKS <input type="checkbox"/> FROZEN <input type="checkbox"/> COOLING INITIATED					
Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO												Submission Comments identified on Sample Receipt Notification: <input type="checkbox"/> YES <input type="checkbox"/> NO					
												Cooler Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A Sample Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A					
												INITIAL COOLER TEMPERATURES °C					
												FINAL COOLER TEMPERATURES °C					
												8°C (avg) 10					
<b>SHIPMENT RELEASE (client use)</b>			<b>INITIAL SHIPMENT RECEPTION (ALS use only)</b>									<b>FINAL SHIPMENT RECEPTION (ALS use only)</b>					
Released by: Rebecca Hurtubise Date: Aug 9, 8:30 am Time:			Received by: [Signature] Date: Aug 10/22 Time: 5:30									Received by: [Signature] Date: 13 Aug 22 Time: 11:15 am					

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FEB 2022 FROM

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.



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## Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page 2 of 2

Canada Toll Free: 1 800 668 9878

Report To		Reports / Recipients		Turnaround Time (TAT) Requested		AFFIX ALS BARCODE LABEL HERE (ALS use only)	
Contact and company name below will appear on the final report		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		<input checked="" type="checkbox"/> Routine [R] if received by 3pm M-F - no surcharges apply <input type="checkbox"/> 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum <input type="checkbox"/> 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum <input type="checkbox"/> 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum <input type="checkbox"/> 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum <input type="checkbox"/> Same day [E2] if received by 10am M-S - 200% rush surcharge			
Company:	AECOM	Merge QC/QCI Reports with COA <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A					
Contact:	Jessica Stepney	<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked					
Phone:	780-298-6562	Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX					
Company address below will appear on the final report		Email 1 or Fax: Jessica.Stepney@aecom.com					
Street:	101-18817 Stony Plain Rd. NW	Email 2: rebecca.hurtubise@aecom.com					
City/Province:	Edmonton, AB	Email 3:					
Postal Code:	T5S 0C2			Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.			
Invoice To		Invoice Recipients		Date and Time Required for all E&P TATs:			
Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		For all tests with rush TATs requested, please contact your AM to confirm availability.			
Copy of Invoice with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Email 1 or Fax: Jessica.Stepney@aecom.com					
Company:		Email 2:					
Contact:							
Project Information		Oil and Gas Required Fields (client use)		Analysis Request			
ALS Account # / Quote #: EO22-AECO100-012 Great Bear Lake		AFE/Cost Center:		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below			
Job #: 60662734		Major/Minor Code:					
PO / AFE:		Routing Code:					
LSD:		Requisitioner:					
ALS Lab Work Order # (ALS use only):		Location:					
ALS Contact: Pamela Toledo		Sampler: R. Hurtubise					
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS		
	GBL-2022-00001-013	08-Aug-22	13:30	Water	7	R	R
	GBL-2022-00001-014						
	GBL-2022-00001-015	08-Aug-22	14:00	Water	10	R	R
	GBL-2022-00001-016						
	GBL-2022-00001-017	08-Aug-22	14:30	Water	12	R	R
	GBL-2022-00001-018 (Travel Blank)				14	R	R
	GBL-2022-00001-022	08-Aug-22	15:42		10	R	R
	GBL-2022-00001-023		15:35		10	R	R
	GBL-2022-00001-024		15:50		10	R	R
	GBL-2022-00001-025		15:59		10	R	R
	GBL-2022-00001-030						
	GBL-2022-00001-031	08-Aug-22	16:30	Water	2	R	R
Drinking Water (DW) Samples <sup>1</sup> (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only)			
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				Cooling Method: <input type="checkbox"/> NONE <input type="checkbox"/> ICE <input type="checkbox"/> ICE PACKS <input type="checkbox"/> FROZEN <input type="checkbox"/> COOLING INITIATED			
Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				Submission Comments identified on Sample Receipt Notification: <input type="checkbox"/> YES <input type="checkbox"/> NO			
				Cooler Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A Sample Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A			
				INITIAL COOLER TEMPERATURES °C		FINAL COOLER TEMPERATURES °C	
						8°C (avg 10)	
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)		FINAL SHIPMENT RECEPTION (ALS use only)			
Released by: Rebecca Hurtubise	Date: Aug 9, 2022 8:30am	Time: 8:30	Received by: R. Hurtubise	Date: Aug 10, 2022	Time: 15:30	Received by: R. Hurtubise	Date: Aug 13, 2022

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FEB 2022 (R10)

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1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.





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# Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page 1 of 2

Canada Toll Free: 1 800 668 9878

<b>Report To</b> Contact and company name below will appear on the final report Company: AECOM Contact: Jessica Stepney Phone: 780-298-6562 Company address below will appear on the final report Street: 101-18817 Stony Plain Rd. NW City/Province: Edmonton, AB Postal Code: T5S 0C2		<b>Reports / Recipients</b> Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL) Merge QC/QCI Reports with COA <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: Jessica.Stepney@aecom.com Email 2: rebecca.hurtubise@aecom.com Email 3:		<b>Turnaround Time (TAT) Requested</b> <input checked="" type="checkbox"/> Routine [R] if received by 3pm M-F - no surcharges apply <input type="checkbox"/> 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum <input type="checkbox"/> 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum <input type="checkbox"/> 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum <input type="checkbox"/> 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum <input type="checkbox"/> Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests. <b>Date and Time Required for all E&amp;P TATs:</b>		<b>AFFIX ALS BARCODE LABEL HERE</b> (ALS use only)																													
<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Copy of Invoice with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Company: Contact:		<b>Invoice Recipients</b> Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: Jessica.Stepney@aecom.com Email 2:		<b>Analysis Request</b> Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below <table border="1"> <tr> <th rowspan="2">NUMBER OF CONTAINERS</th> <th colspan="12"></th> <th rowspan="2">SAMPLES ON HOLD</th> <th rowspan="2">EXTENDED STORAGE REQUIRED</th> <th rowspan="2">SUSPECTED HAZARD (see notes)</th> </tr> <tr> <th>Routine</th> <th>Total Metals</th> <th>Dissolved Metals</th> <th>TOC</th> <th>DOC</th> <th>TSS</th> <th>BTEX, F1-F4</th> <th>Oil &amp; Grease</th> <th>Radium 226</th> <th>Pb 210</th> <th></th> <th></th> </tr> </table>				NUMBER OF CONTAINERS													SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)	Routine	Total Metals	Dissolved Metals	TOC	DOC	TSS	BTEX, F1-F4	Oil & Grease	Radium 226	Pb 210		
NUMBER OF CONTAINERS													SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)																				
	Routine	Total Metals	Dissolved Metals	TOC	DOC	TSS	BTEX, F1-F4	Oil & Grease	Radium 226	Pb 210																									
<b>Project Information</b> ALS Account # / Quote #: EO22-AECO100-012 Great Bear Lake Job #: 60662734 PO / AFE: LSD:		<b>Oil and Gas Required Fields (client use)</b> AFE/Cost Center: PO# Major/Minor Code: Routing Code: Requisitioner: Location:																																	
<b>ALS Lab Work Order # (ALS use only):</b>		ALS Contact: Pamela Toledo Sampler: R. Hurtubise																																	
<b>Sample Identification and/or Coordinates</b> (This description will appear on the report)		<b>Date</b> (dd-mmm-yy)		<b>Time</b> (hh:mm)		<b>Sample Type</b>																													
GBL-2022-00001-001 GBL-2022-00001-002 GBL-2022-00001-003 GBL-2022-00001-004 GBL-2022-00001-005 GBL-2022-00001-006 GBL-2022-00001-007 GBL-2022-00001-008 GBL-2022-00001-009 GBL-2022-00001-010 GBL-2022-00001-011 GBL-2022-00001-012		08-Aug-22 ↓		18:15 18:52 18:03 19:00 14:23 13:43 15:10 16:10 ↓		Water ↓																													
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b> Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		<b>Notes / Specify Limits for result evaluation by selecting from drop-down below</b> (Excel COC only)		<b>SAMPLE RECEIPT DETAILS (ALS use only)</b> Cooling Method: <input type="checkbox"/> NONE <input type="checkbox"/> ICE <input type="checkbox"/> ICE PACKS <input type="checkbox"/> FROZEN <input type="checkbox"/> COOLING INITIATED Submission Comments identified on Sample Receipt Notification: <input type="checkbox"/> YES <input type="checkbox"/> NO Cooler Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A Sample Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A INITIAL COOLER TEMPERATURES °C: FINAL COOLER TEMPERATURES °C:																															
<b>SHIPMENT RELEASE (client use)</b> Released by: Rebecca Hurtubise Date: Aug 9, 8:30 am Time:		<b>INITIAL SHIPMENT RECEPTION (ALS use only)</b> Received by: [Signature] Date: Aug 10/22 Time: 8:30		<b>FINAL SHIPMENT RECEPTION (ALS use only)</b> Received by: Date: Time:																															

Environmental Division  
 Yellowknife  
 Work Order Reference  
**YL2201188**



Telephone : + 1 867 873 5593

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