



Ootischenia Landfill

2025 Annual Operations and Monitoring Report

Table of Contents

Executive Summary	ii
1.0 Site Information	1
2.0 Waste Received	1
2.1 Waste Landfilled	1
2.2 Waste Recycling, Re-Purposing, and Diversion	1
2.3 Stockpiling	2
2.4 Septage	2
3.0 Airspace Consumption and Remaining Site Life	2
4.0 Site Operations and Development	3
4.1 Operational Problems and Corrective Actions	3
4.2 2025 Operational Review.....	3
4.3 2026 Operational Plan	4
5.0 Changes from Approved Plans, Programs and Reports	4
6.0 Expenditures and Closure Fund	5
7.0 Wildlife Observations	5
8.0 Landfill Operator Training	5
9.0 Environmental Monitoring Program	5
10.0 References	6

FIGURES

Figure 1: Site Plan

Figure 2: Environmental Monitoring Plan Locations

APPENDICES

Appendix A: Operational Certificate No. 17126

Appendix B: Waste Stream Tonnage

Appendix C: Airspace and Life Expectancy

Appendix D: Interim Fill Plan

Appendix E: Environmental Monitoring Program

Appendix F: 2025 Annual Environmental Monitoring Program Report

Executive Summary

The 2025 Annual Operations and Monitoring Report for the Ootischenia Landfill presents an overview of existing site conditions, operations, and the environmental monitoring program in fulfillment of the annual reporting requirements outlined in Section 4 of Operational Certificate 17126. The report is in general accordance with Section 10.6 of the British Columbia Landfill Criteria for Municipal Solid Waste (Ministry of Environment, 2016).

The site is located approximately seven kilometres southeast of the City of Castlegar, British Columbia. The area of the landfill site is approximately 32.7 hectares. The landfill is bound by provincial crown land; the Columbia River is approximately 500 metres west of the site, and Cai Creek is approximately 200 metres to the north.

In 2025, approximately 23,342 tonnes of waste was landfilled, 13,058 tonnes was diverted, and 703 tonnes was stockpiled. Approximately 6,032 m³ of septage was accepted in 2025.

Operational and maintenance expenditures for the landfill were \$655,148 in 2024 and \$23,317,196 in Asset Retirement Obligation (ARO) was booked for the landfill. 2025 financials are not available by the deadline for this report and will be reported in the 2026 annual report.

Operational developments that took place in 2025 included:

- Completion of an Archeological Impact Assessment on the south bench above the landfill, and northwest corner of the License of Occupation. An archeological site was found just beyond the northwest boundary of the landfill. Further archeological assessment will take place in 2026;
- Commenced drafting an updated Design, Operations and Closure Plan (DOCP), which will be completed in 2026;
- Continued development of the site in accordance with the existing Design and Operations Plan;
- Continued landfilling of refuse, septage management, diversion activities, and storing recyclables from municipal, commercial and light industrial sources as specified in the Operational Certificate; and,
- Continued site inspections.

Site operations to be carried out for the next reporting period include:

- Completion of an updated Design, Operations, and Closure Plan;
- Completion of additional assessments as part of the Archaeological Impact Assessment;
- Continuation of process to submit request for acquisition of crown lands;
- Design and upgrades to the waste transfer area at the site;
- Maintenance of the septage receiving area;
- A drilling program to repair and/or replace dry and damaged monitoring wells, as well as installation of a background well to the southeast of the landfill footprint and a compliance well to the west of the landfill footprint;
- Continue development of the site in accordance with the updated Design, Operations, and Closure Plan;
- Continue landfilling of refuse, septage management, diversion activities, and storing recyclables from municipal, commercial and light industrial sources as specified in the Operational Certificate; and,
- Continue site inspections.

The 2025 Annual Environmental Monitoring Program Report is included as an appendix in this report.

1.0 Site Information

The Ootischenia Landfill, operated by the Regional District of Central Kootenay (RDCK) under operational certificate 17126 (Appendix A), is located approximately seven kilometers southeast of the City of Castlegar, British Columbia, on the east side of the Columbia River. The legal description of the discharge area is Lot 1, Sub Lot 23, D.L. 4598, Plan 6599, plus a portion of Sub Lot 23, Plan X-34, D.L. 4598. The total area of the site is approximately 32.7 hectares and it is surrounded by provincial crown land. The Columbia River is located approximately 500 meters west of the site, while Cai Creek is located approximately 200 meters to the north.

2.0 Waste Received

Waste received at the Ootischenia Landfill is generally received from Castlegar, Kaslo, Nelson, Salmo, Slocan, and Electoral Areas D, E, F, G, I and J, as well as a portion of Area H of the RDCK. In December 2025, the Ootischenia landfill also began receiving waste from New Denver, Silverton, Nakusp, Area K, and the remainder of Area H due to the closure of the Nakusp landfill. A summary of waste generation and diversion data and disposal rates is presented in Appendix B.

2.1 Waste Landfilled

In 2025, approximately 23,342 tonnes of waste was landfilled and the annual landfilling rate was approximately 479 kg per capita. Material accepted for landfill disposal included mixed waste, asbestos, construction, demolition, renovation (CDR) waste, land clearing debris, noxious weeds, rubble, bulky waste (includes asphalt and concrete), and municipal wastewater biosolids.

2.2 Waste Recycling, Re-Purposing, and Diversion

The RDCK has endorsed the concept of Zero Waste. This goal forms the cornerstone of the RDCK's 2021 Resource Recovery Plan (RRP) which was approved by the Province in February 2023.

Approximately 13,058 tonnes of waste was diverted from the Ootischenia landfill watershed in 2025, resulting in a diversion rate of 35%. This includes 6,622 tonnes of soil that was re-purposed as intermediate cover material. Appliances, yard and garden waste, scrap metal, used tires, automotive batteries, and propane tanks are collected on-site and diverted from the landfill. Non-hazardous contaminated soil is accepted at the landfill, where it is stockpiled and re-purposed as daily or intermediate cover material. Other than the re-purposed soil, all diverted materials are temporarily stored on site before being transported to an end user.

The RDCK's recycling program operates under the Recycle BC (RBC) stewardship program for collection and recycling of residential paper and packaging materials. Core depots for RBC recycling in the Ootischenia landfill watershed were established at the Ootischenia landfill as well as in Crescent Valley, Slocan, Nelson, Balfour, Kaslo, and Salmo. In addition to these, the RDCK operates satellite depots in Grohman Narrows, Marblehead, and Ymir. The following materials are diverted through the RBC recycling program:

- Mixed paper and cardboard
- Glass bottles and jars
- Mixed containers
- Plastic bags and overwrap
- Other flexible plastic packaging
- White and coloured foam packaging

The RDCK also operates a recycling program for cardboard generated by the industrial, commercial, and institutional (ICI) sector. Materials collected through the RBC and ICI cardboard recycling programs are not recycled on-site at the Ootischenia landfill; however the amounts diverted by these programs for the area serviced by the Ootischenia landfill are included in Appendix B for accurate calculation of waste generation and diversion rates.

In 2025, Household Hazardous Waste (HHW) round-up events for the Ootischenia catchment area were held in Castlegar, Silverton, and Kaslo to provide an alternative disposal option for all types of non-extended producer responsibility (EPR) HHW and some EPR products, including, but not limited to: batteries, lighting products, smoke and CO alarms, small appliances, and other electronic waste.

- 345 residents participated in the Castlegar event, safely disposing of approximately 11.8 tonnes of HHW and EPR materials.
- 106 residents participated in the Kaslo event, safely disposing of approximately 5.7 tonnes of HHW and EPR materials.
- 77 residents participated in the Silverton event, safely disposing of approximately 4.7 tonnes of HHW and EPR materials.

Year-round drop-off of materials is also available at the Nelson Leafs Bottle Depot in the City of Nelson. Approximately 250.4 tonnes of HHW and EPR materials were collected at the depot in 2025.

2.3 Stockpiling

In addition to the above materials, 703.1 tonnes of clean wood waste was collected and stockpiled at the site in 2025. Wood waste has historically been chipped and used for road maintenance in fill areas and mixed with dried septage; however the amount of wood waste received was far higher than what the landfill was able to re-purpose, resulting in large stockpiles of woodchips that present a fire hazard. As of spring 2025, only clean wood was diverted for grinding and all other waste wood was landfilled. The RDCK will continue to look for an economically viable higher end for contaminated wood waste with the goal of diverting this material from the landfill.

2.4 Septage

The site is authorized to accept, treat, and discharge septage. Three septage ponds (infiltration basins) are located in the southeast area of the site. Septage is discharged to the infiltration basins, mixed with chipped wood diverted from the landfill, and allowed to dry before removal to the adjacent composting area. Approximately 6,032 m³ of septage (assuming a density of 1,000 kg /m³) was discharged at the site in 2025.

Development of a septage strategy is currently underway to determine the best solution for septage management across the RDCK.

3.0 Airspace Consumption and Remaining Site Life

A CAT 826B compactor is currently used at the site for waste compaction. This equipment is estimated to yield an in-place refuse density of between 600 – 850 kg/m³.

The 2009 Operations and Monitoring Report calculated the apparent waste density as 717 kg/m³; based on topographic contours generated from aerial surveys completed on June 1, 2007 and May 27, 2009.

This value is within the range of the expected value given the landfill size, equipment, and filling practices, indicating effective waste placement and management.

Remaining airspace calculations are provided in Appendix C and are based on recorded tonnages of waste landfilled, airspace calculated in the 2009 Design and Operations (D&O) Plan, a density conversion factor of 0.717 tonnes/m³, and a 6:1 ratio of waste to cover soil; based on the 2009 Design and Operations Plan, the landfill is expected to continue to accept material until approximately 2047 (21 years).

A conceptual Design and Operations Plan, including studies presenting options to extend the life and footprint of the landfill, was completed in 2019. The optimized design concept was included in the RDCK's approved Resource Recovery Plan (Solid Waste Management Plan) and is guiding the development of an updated Design, Operation, and Closure Plan (currently underway, expected to be completed in 2026. An interim fill plan was completed in fall 2024 (Appendix D).

4.0 Site Operations and Development

Landfilling operations at the site were initiated by the RDCK in 1968. The site operates from 8:30 am to 4:00 pm from November 1 to March 31, and 8:30 am to 5:30 pm from April 1 to October 31. The site is open Monday to Saturday and closed Sundays and statutory holidays. The gate is locked when the site is closed to prevent unauthorized vehicle entrance and waste disposal.

The landfill is operated as a natural attenuation landfill. Waste received is recorded at the weigh scale by the site attendant. The authorized works include the sanitary landfill, recycling/storage areas, yard and garden waste storage area, and septage ponds. Refuse is placed and compacted at a tipping face limited to approximately 100-200 m² at any one time. Daily cover is primarily provided through the Revelstoke Iron Grizzly (RIG) alternate daily cover system and supplementary cover material is acquired from on site borrow areas. A site plan illustrating the existing conditions and authorized works is presented as Figure 1.

The equipment used at the landfill consists of Cat and Rex compactors, a variety of material handling trucks, a loader, skidsteer, and excavator. On site structures include the attendant scale house, re-use shed, Quonset hut, and a sea can for equipment storage.

Landfill gas and leachate are not collected or treated at the site; however monitoring for leachate-related impacts is conducted as part of the annual Environmental Monitoring Program (EMP) as described in Appendices E and F.

4.1 Operational Problems and Corrective Actions

As septage volumes being received at Ootischenia have increased in recent years, the cells for this material are nearing capacity. An updated strategy for managing septic waste at the site is being developed and will be implemented in coming years. The third quarter site inspection noted that bin railings were in need of repair. Subsequent to this, new waste bins were fabricated and repairs on the railings at the bin wall were completed.

4.2 2025 Operational Review

Activities carried out at the site in 2025 are summarized below:

- Completion of an Archeological Impact Assessment on the south bench above the landfill, and northwest corner of the License of Occupation. An archeological site was found just beyond the northwest boundary of the landfill. Further archeological assessment will take place in 2026;
- Commenced drafting an updated Design, Operations and Closure Plan (DOCP), which will be completed in 2026;
- Continued development of the site in accordance with the existing Design and Operations Plan;
- Continued landfilling of refuse, septage management, diversion activities, and storing recyclables from municipal, commercial and light industrial sources as specified in the Operational Certificate; and,
- Continued site inspections.

4.3 2026 Operational Plan

Site operations to be carried out for the next reporting period include:

- Completion of an updated Design, Operations, and Closure Plan;
- Completion of additional assessments as part of the Archaeological Impact Assessment;
- Continuation of process to submit request for acquisition of crown lands;
- Design and upgrades to the waste transfer area at the site;
- Maintenance of the septage receiving area;
- A drilling program to repair and/or replace dry and damaged monitoring wells, as well as installation of a background well to the southeast of the landfill footprint and a compliance well to the west of the landfill footprint;
- Continue development of the site in accordance with the updated Design, Operations, and Closure Plan;
- Continue landfilling of refuse, septage management, diversion activities, and storing recyclables from municipal, commercial and light industrial sources as specified in the Operational Certificate; and,
- Continue site inspections.

5.0 Changes from Approved Plans, Programs and Reports

2024 operations were in accordance with Operational Certificate 17126 and the RDCK RRP and generally followed the Design and Operations plan as prepared and updated by Conestoga-Rovers & Associates in 2009. In 2019 Wood Environment & Infrastructure Solutions (Wood, formerly AMEC Foster Wheeler) prepared a conceptual Design and Operations Plan to further investigate preliminary designs and cost estimates for future landfill expansion designs. The RDCK detailed this concept in the approved RRP and is the initial stages of developing a new Design, Operation, and Closure Plan to reflect the optimized footprint concept.

The Environmental Monitoring Plan (EMP) for the Site was reviewed with Masse Environmental Consultants in early 2025. The format of the EMP summary table was updated to provide more clarity on the sampling schedule and consistency in the parameters analyzed (Appendix E). Groundwater and surface water sampling was conducted in general accordance with the EMP; any deviations are described in the report provided in Appendix F.

6.0 Expenditures and Closure Fund

Operational and maintenance expenditures for the landfill were \$655,148 in 2024 and \$23,317,196 in Asset Retirement Obligation (ARO) is booked for the landfill. 2025 financials are not available by the deadline for this report and will be reported in the 2026 annual report.

7.0 Wildlife Observations

Mitigative measures to minimize the risk to landfill personnel, the public and wildlife are carried out on an as-required basis. The electrified wildlife fence is energized, monitored and maintained throughout the active bear season to control wildlife access to the landfill area. Eagles, turkeys, and crows continue to visit the site. Bank swallows were observed nesting in the walls of the borrow pit area during the June site inspection. The landfill operators ensured that nesting bank swallows are not disturbed and if observed going forward will ensure their habitat is protected from May till the end of nesting season.

8.0 Landfill Operator Training

The Operation of the site is a contracted service and the training and certification remain the responsibility of the Contractor. There is a qualified operator onsite at all times.

9.0 Environmental Monitoring Program

The 2025 Annual Environmental Monitoring Report is included in Appendix F.

10.0 References

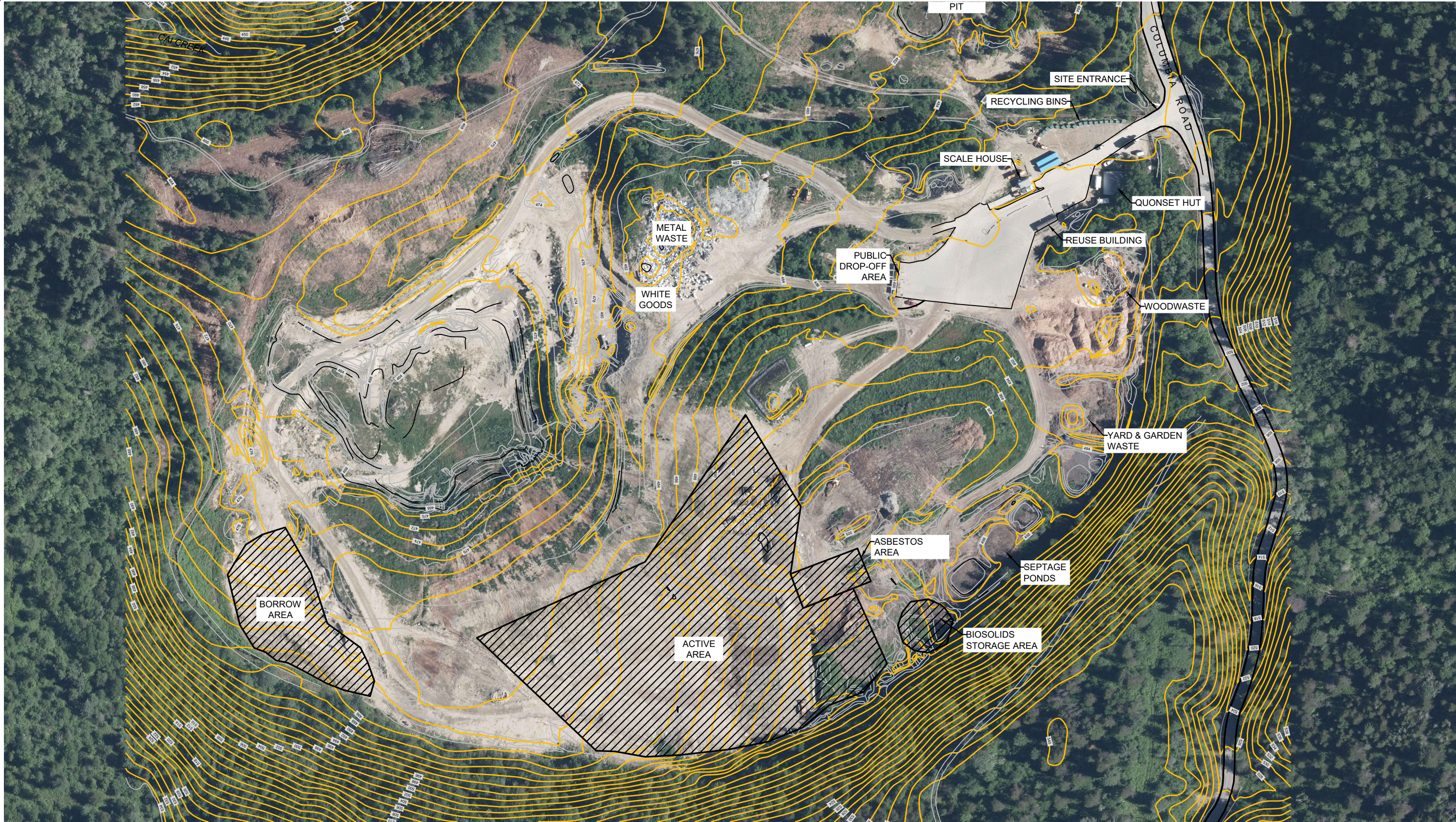
BC MoE, 2016. B. C. Landfill Criteria for Municipal Solid Waste, 2nd Edition, Prepared by the B.C. Ministry of Environment, June 2016.

Masse Environmental, 2026. Annual Environmental Monitoring Program, Ootischenia Landfill. March 2026.

FIGURES

Figure 1: Site Plan

Figure 2: Environmental Monitoring Plan Locations



**REGIONAL DISTRICT OF
CENTRAL KOOTENAY
ENVIRONMENTAL SERVICES**

Box 590, 202 Lakeside Dr., Nelson BC, V1L 5R4
Tel: (250) 352-6665 Fax: (250) 352-9300
Web: www.rdcok.bc.ca E-mail: rdok@rdok.gov.bc.ca

OOTISCHENIA
RESOURCE RECOVERY
FACILITY

FIGURE 1
SITE IMPROVEMENTS

VERIFY SCALE

BAR IS 12mm ON
ORIGINAL DRAWING.

0 12mm

IF NOT 12mm ON
THIS SHEET ADJUST
SCALES ACCORDINGLY.

LEGEND

1 2 3 4 5 6 7 8



CROWN LAND LEASE



**REGIONAL DISTRICT OF
CENTRAL KOOTENAY
ENVIRONMENTAL SERVICES**

Box 590, 202 Lakeside Dr., Nelson BC, V1L 5R4
Tel: (250) 352-6665 Fax: (250) 352-9300
Web: www.rdcok.bc.ca E-mail: rdok@rdok.gov.bc.ca

OOTISCHENIA
RESOURCE RECOVERY
FACILITY

ENVIRONMENTAL MONITORING
LOCATION PLAN

VERIFY SCALE

BAR IS 12mm ON
ORIGINAL DRAWING.

0 12mm

IF NOT 12mm ON
THIS SHEET ADJUST
SCALES ACCORDINGLY.

LEGEND



ENVIRONMENTAL MONITORING WELL



DECOMMISSIONED WELL



DRY WELL

APPENDICES

Appendix A: Operational Certificate No. 17126

Appendix B: 2025 Waste Stream Tonnage

Appendix C: Airspace and Life Expectancy

Appendix D: Interim Fill Plan

Appendix E: Environmental Monitoring Plan

Appendix F: 2025 Annual Environmental Monitoring Program Report

Appendix A: Operational Certificate No. 17126



December 15, 2014

Tracking Number: 155

Authorization Number: 17126

REGISTERED MAIL

REGIONAL DISTRICT OF CENTRAL KOOTENAY
BOX 590
202 LAKESIDE DRIVE
NELSON, BC
V1L 5R4

Dear Operational Certificate Holder:

Enclosed is Operational Certificate 17126 issued under the provisions of the *Environmental Management Act*. This Operational Certificate supersedes Permit PR – 501 which is cancelled in accordance with Section 24(10) of the *Environmental Management Act*. Your attention is respectfully directed to the terms and conditions outlined in the operational certificate.

This operational certificate does not authorize entry upon, crossing over, or use for any purpose of private or Crown lands or works, unless and except as authorized by the owner of such lands or works. The responsibility for obtaining such authority rests with the operational certificate holder. It is also the responsibility of the operational certificate holder to ensure that all activities conducted under this authorization are carried out with regard to the rights of third parties, and comply with other applicable legislation that may be in force.

This decision may be appealed to the Environmental Appeal Board in accordance with Part 8 of the *Environmental Management Act*. An appeal must be delivered within 30 days from the date that notice of this decision is given. For further information, please contact the Environmental Appeal Board at (250) 387-3464.

Administration of this operational certificate will be carried out by staff from the Southern Interior Region - Kootenay. Plans, data and reports pertinent to the operational certificate are to be submitted to the Regional Manager, Environmental Protection, at Ministry of Environment, Regional Operations, Southern Interior Region - Kootenay, 401 - 333 Victoria St., Nelson, BC V1L 4K3.

Yours truly,

A handwritten signature in black ink, appearing to read 'Carol Danyluk', with a stylized flourish at the end.

Carol Danyluk, P.Eng.
for Director, *Environmental Management Act*
Southern Interior Region

Enclosure

cc: Environment Canada



Ministry of Environment

OPERATIONAL CERTIFICATE

17126

Under the Provisions of the Environmental Management Act

REGIONAL DISTRICT OF CENTRAL KOOTENAY

**BOX 590
202 LAKESIDE DRIVE
NELSON, BC
V1L 5R4**

is authorized to manage municipal solid waste and discharge waste as specified in this authorization to the ground in accordance with the Regional District of Central Kootenay's Solid Waste Management Plan. Contravention of any of these terms and conditions is a violation of the *Environmental Management Act (EMA)* and may result in prosecution.

This Operational Certificate supersedes all versions of Permit PR 501, issued under Section 28, of the *Environmental Management Act (EMA)*. All ministry policies and guidelines specified in this document refer to the most current version of these policies and guidelines.

1. AUTHORIZED DISCHARGES & FACILITIES

1.1 Authorized Discharge

This section applies to the discharge of municipal solid waste to a SANITARY LANDFILL, treatment of contaminated soil at a SOIL TREATMENT AREA and discharge of septage to DRYING BEDS at a site known as the Ootischenia Landfill in Castlegar, BC. The site reference number for this discharge is E211662.

Date issued: December 15, 2014

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for Director, *Environmental Management Act*
Southern Interior Region

1.1.1 The authorized discharge is:

- a. Municipal solid waste and other waste as may be authorized by the Director in writing.
- b. Septage in designated drying beds as per the Design & Operations Plan.

For the purpose of this section “Septage” refers to typical septic tank contents.

1.1.2 All solid waste discharged to this landfill must meet the requirements of the Regional District of Central Kootenay Solid Waste Management Plan and applicable by-laws of the Regional District.

The controlled discharge of septage must occur only in beds located as specified in the Design & Operation Plan.

1.1.3 The authorized works are a sanitary landfill and Septage Drying Beds. The authorized works include berms, cover soil or cover material, surface water diversionary works and are inclusive of any related appurtenances pertaining to the works and discharges specified in this section.

The authorized works referred to in this section must be maintained and operable while municipal solid waste, contaminated soil and septage is being actively managed i.e., disposed, transferred and/or recycled at the site. Post closure requirements for the site are specified in Section 5.

The authorized works are located approximately as shown on the attached Site Plan A.

1.1.4 The legal description for the location of the point of discharge is Lot 1, Sublot 23, D.L. 4598, Kootenay District, Plan 6599, plus a portion of Sublot 4598, Kootenay District, Plan X-34 as shown on attached Site Plan A.

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for Director, *Environmental Management Act*
Southern Interior Region

- 1.1.5 The following waste types and materials are prohibited from being landfilled:
- Hazardous Wastes as defined in the Hazardous Waste Regulation, other than those specifically approved within the Hazardous Waste Regulation for disposal to authorized landfills.
 - Human anatomical and animal waste components of biomedical waste and the untreated non-anatomical waste component of biomedical waste. Biomedical wastes are defined in the Guidelines for the Management of Biomedical Wastes in Canada (Canadian Council of Ministers of the Environment, February 1992).
 - Bulk liquids and semi-solid wastes, which contain free liquids, as determined by US EPA Method 9095A Paint Filter Liquids Test, Test Methods for Evaluating Solid Wastes -Physical/Chemical Methods (EPA Publication No. Sw-846).
 - Waste oil.
 - Vehicle hulks.
 - Automobile batteries.
 - Wastes that are specifically prohibited by applicable by-laws or waste bans of the Regional District.
- 1.1.6 The disposal of animal carcasses is not allowed, an exception being those of a domestic nature, the result of animal road kills or animal control activities of the Ministry of Environment's Conservation Officer Service (COS). Disposal of other animal carcasses is allowed if authorized by the Director.
- Mortalities from agricultural operations may be discharged where the generator has demonstrated to the satisfaction of the Director that the carcasses cannot be disposed of in accordance with the Agricultural Waste Control Regulation under the *Environmental Management Act*.
- 1.1.7 The total waste discharged during any operational period of the operational site life must not exceed that calculated for the period based on the fill rate specified in the Design & Operations Plan.
- 1.1.8 Storage of recyclable material must be in accordance with the Design & Operations Plan and applicable regulations.

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for Director, *Environmental Management Act*
Southern Interior Region

- 1.1.9 Composting of material from septage drying beds is permitted provided that compost is utilized onsite only.
- 1.1.10 Contaminated soil that contains contaminants in concentrations less than hazardous waste as defined in the Hazardous Waste Regulation under the *Environmental Management Act* may be disposed at the landfill. Disposal includes but is not limited to monofilling, co-disposal with other wastes, and use as daily or intermediate cover material. The use of these soils as final cover material is prohibited if contaminants exceed commercial / industrial land use standards as specified in the Contaminated Sites Regulation under the *Environmental Management Act*.
- 1.1.11 The disposal of waste asbestos in compliance with the requirements of Section 40 of the Hazardous Waste Regulation under the *Environmental Management Act* is permitted. In accordance with Section 40 “Management of Waste Asbestos”, under part 6 “Management of Specific Hazardous Wastes” of the Hazardous Waste Regulation, the waste asbestos disposed at a landfill other than a secure landfill must be immediately covered with a minimum of 0.5 metre of cover material.

2. **DESIGN & OPERATIONS PLAN**

- 2.1 The Operational Certificate holder must ensure that a Qualified Professional prepares and maintains a Design and Operations (D & O) Plan for the landfill which is acceptable to the Director. The current Plan must be reviewed within twenty four months of the completion of consolidation of landfilling operations at Ootischenia as specified by the Regional District of Central Kootenay’s Resource Recovery Plan (RRP). Further to this initial review and update within twenty four months, the D & O Plan should be reviewed and updated at least once every five years.

The D & O Plan must address, but not be limited to, each of the subsections in the Landfill Criteria for Municipal Solid Waste including performance, siting, design, operational, closure and post-closure criteria. The facilities must be developed, operated and closed in accordance with the Plan. Should there be any inconsistency between this Operational Certificate and the Plan, this Operational Certificate must take precedence.

Date issued: December 15, 2014



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for Director, *Environmental Management Act*
Southern Interior Region

Written authorization from the Director must be obtained prior to implementing any changes to the approved plans. Based on any information obtained in connection with this facility, the Director may require revision of, or addition to, the design, operating and closure plans.

“As built” drawings certified correct and sealed by a Qualified Professional must be submitted electronically within 60 days of the completion of engineered construction activities required as per the Design & Operations Plan.

3. **LANDFILL OPERATIONS**

3.1 **Inspections**

3.1.1 **Waste Inspections**

The waste acceptance policies and procedures for the landfill must include a program to detect a prohibited waste so that it is prevented from being disposed of in a landfill cell. The Operational Certificate holder must also establish procedures for addressing such non-compliance to prevent recurrence of the same.

3.1.2 **Inspections of Authorized Works**

The Operational Certificate holder must inspect the authorized works at least once every three months to ensure compliance with this Operational Certificate and the BC Landfill Criteria. A record of the inspections and actions recommended or action items must be maintained in the operating record at the site office and made available to the Director upon request. During such inspections, the Operational Certificate holder must also inspect the property boundaries and immediately notify the Regional Manager Environmental Protection of:

- any visual or physical evidence of concerns pertaining to the authorized works such as leachate breaks, damage to monitoring wells;
- any visual or physical evidence of concerns of potential environmental impacts including but not limited to significant litter beyond the property boundary.

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3.2 **Site Access & Supervision**

Locking gates must be maintained at all access routes to the landfill site. Gates, perimeter fencing and/or barriers must be installed where necessary to prevent unauthorized access to the site by vehicles. Gates must be locked during non-operating hours. Onsite signage onsite must be in accordance with the BC Landfill Criteria.

The Operational Certificate holder must ensure that any person(s) authorized to work within the landfill boundary and directly involved in the landfilling of waste is fully cognizant of this Operational Certificate and applicable sections of the BC Landfill Criteria for Municipal Solid Waste and must take all reasonable measures to ensure that the person(s) complies with all requirements of the same. A landfill operator that has received BC Qualified Landfill Operator training, is familiar with the requirements of the Operational Certificate and the specifications of the Design and Operations Plan, must be present at all times during operating hours. Training records for staff must be maintained and made available to the Director upon request.

3.3 **Scavenging & Salvaging**

Uncontrolled scavenging of waste is prohibited. The controlled separation of salvageable waste stream components by persons authorized by the Operational Certificate holder is permitted in areas designated for separation and storage of these materials.

3.4 **Public Health Safety & Nuisance**

Operation of the landfill must be carried out in a manner that ensures that the facility does not pose a threat to public health or safety. The Operational Certificate holder must manage accumulations of litter within the site and prevent litter escaping from the fill area.

3.5 **Waste Deposition, Compaction & Cover**

The Operational Certificate holder must ensure that waste deposition and compaction meets or exceeds the requirements of the BC Landfill Criteria or its most current version. Control must be exercised to ensure keeping freshly deposited refuse in a well defined and small/manageable working face.

3.5.1 **Daily Cover**

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for Director, *Environmental Management Act*
Southern Interior Region

Application of daily cover must be in accordance with requirements of the BC Landfill Criteria. Alternate Daily Cover (ADC) that is functionally equivalent to daily soil cover may be used.

3.5.2 **Intermediate Cover**

Application of intermediate cover must be in accordance with requirements of the BC Landfill Criteria or its most current version. The Director must be notified in writing of the use of functionally equivalent intermediate cover material.

3.5.3 **Final Cover**

Final cover must be installed and maintained in accordance with the requirements of the BC Landfill Criteria. Completed portions of the landfill are to progressively receive final cover during the active life of the landfill as specified in the Design & Operations Plan.

3.6 **Litter, Wildlife & Vector Control**

The Operational Certificate holder must ensure that vector and wildlife attractants are minimized as a result of routine landfilling operations. Such measures include but are not limited to:

- a. Application of cover material in a timely and consistent manner in compliance with the requirements of the BC Landfill Criteria. Installation and maintenance of electrified wildlife control fencing where deemed necessary. The active landfill cell must be enclosed by a bear resistant electrified fence. The fence must be energized during the active bear season and Bear Warning Signs must be posted along the fence.
- b. Ensuring that the public drop off area is used in a manner that does not contribute to wildlife attraction. This includes the timely transfer of waste from public drop off areas to the tipping face or beyond the wildlife control fence, maintaining adequate bin capacity for public drop-off and addressing improper bin usage through awareness raising measures for the public or site users.
- c. Implementing a bird control strategy and bird control measures at the site if required by the Director.

Litter must be controlled and minimized by compacting the waste, minimizing the work face area, applying cover at the required frequencies and good

Date issued: December 15, 2014



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for Director, *Environmental Management Act*
Southern Interior Region

housekeeping practices. A regular litter pick-up program to target windblown litter must be established as part of routine site operations. Litter prevention measures including provision of litter control fences must be under taken, if necessary. Controls must prevent the accumulation, or off-site migration, of litter in quantities that create a nuisance or cause other problems.

For the purpose of this section, a “vector” is defined as an organism or carrier capable of transmitting a pathogen from one organism to another including, but not limited to flies and other insects, rodents, and birds.

For the purpose of this section an “attractant” is defined as waste, municipal solid waste, refuse, organic matter, compost, garbage, food or food waste that attracts bears or other wildlife.

3.7 **Operations, Maintenance & Emergency Procedures Manual**

The Operational Certificate holder must prepare an Operations, Maintenance and Emergency Procedures Manual. This manual must be reviewed and kept updated to reflect current site conditions. A copy of the manual must be available at the site office and must be made available to the Director upon request.

3.8 **Fire Prevention & Control**

The Operational Certificate Holder must take all reasonable measures to prevent fires from occurring at the site and is responsible for complying with all local fire safety requirements. The Operational Certificate holder must provide and maintain firefighting equipment and materials as required for the site.

In the event of a landfill fire the following must be notified immediately:

- The Fire Department
- Provincial Emergency Program (PEP)
- The Regional Manager Environmental Protection

3.9 **Maintenance of Works & Emergency Procedures**

The Operational Certificate holder must maintain the authorized works in good working order. In the event of an emergency or condition beyond the control of the Operational Certificate holder which prevents continuing operation of the authorized works and/or the continued performance of the prescribed methods of operation, the Operational Certificate holder must immediately notify the

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Southern Interior Region

Regional Manager Environmental Protection and take appropriate remedial action in consultation with a Qualified Professional if specified by the Director.

Any activity or construction at the disposal site must be carried out in a manner that protects the integrity of the areas under final cover and without compromising landfill stability or without damage to the authorized works and related appurtenances.

Any settlement of areas under final cover or differential settlement that prevents the authorized works and appurtenances mentioned in Section 1 from functioning as intended in the Design & Operations plan must be addressed/ remedied accordingly to the satisfaction of the Director.

All access roads, within the landfill boundary, used for transporting waste to the tipping area for disposal must be maintained as necessary to assure safe and reliable all-weather access to the tipping face.

3.10 **Qualified Professionals**

Information pertaining to the landfill including details of works, plans, assessments, investigations, surveys, programs and reports, must be prepared by a Qualified Professional unless specified otherwise by the Director.

3.11 **Additional Facilities or Works**

The Director may require additional investigations, surveys, and the construction of additional facilities or works related to the landfill operation. The Director may also revise the requirements of any of the information required by this Operational Certificate including plans, programs, assessments and reports.

3.12 **Groundwater & Surfacewater Quality Protection**

The Operational Certificate holder must take appropriate measures to ensure that ground water and surface water quality does not decrease beyond that specified by the British Columbia Water Quality Guidelines or other appropriate criteria as may be specified by the Director at and beyond the landfill property boundary.

These measures include but are not limited to:

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Southern Interior Region

- a. Ensuring that the landfill is operated in accordance with a Design & Operations Plan which specifies measures to prevent decreases in groundwater and surface water quality at and beyond the property boundary.
- b. Ensuring that the landfill is operated in a manner that prevents the exceedance in surface water of anticipated leachate indicators or parameters distinctive of leachate or those attributable to landfilling operations at the site or those specified by the Director at the landfill boundary.
- c. Ensuring that adequate storm water works are constructed and maintained to ensure that run-off is intercepted and conveyed away from construction, operational and capped phases and directed to the storm water management basin.
- d. Ensuring that storm water management works at the landfill are designed for predicted storm events and that designs are updated, if necessary, to include revisions to reasonable contingencies for the changes to precipitation, if any, at the site resulting from perceptible long term climate shifts.
- e. Ensuring that measures are taken to prevent stormwater from entering landfilled waste and that the management systems for storm water that has not come in contact with waste are hydraulically separate from those for managing impacted surface water.
- f. Ensuring that the landfill is operated in a manner that prevents the exceedance beyond BC Water Quality Guidelines in groundwater, of anticipated leachate indicators or parameters distinctive of leachate or those specified by the Director at the property boundary. Ensuring that suitable measures are taken to investigate an increasing trend for these parameters if this trend corresponds to an increasing trend also at other wells downgradient of the waste footprint and in the groundwater flowpath towards the property boundary.

If exceedances to the specified water quality criteria occur at the landfill boundary as a result of landfill operations, suitable corrective measures acceptable to the Director must be undertaken.

3.13 **Landfill Gas**

The Operational Certificate holder must ensure that operation of the landfill must not cause combustible gas concentrations to exceed the lower explosive limit in soils at the property boundary or 25% of the lower explosive limit at or in on-site or off-site structures.

The Operational Certificate holder must ensure that the facility is in compliance with the requirements of the *Landfill Gas Management Regulation* on or before applicable dates specified in the regulation. The requirements of the regulation and its guideline documents must be incorporated by the Operational Certificate

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Southern Interior Region

holder into the Design and Operation Plan revisions as they come into effect and as applicable.

4. **MONITORING & REPORTING REQUIREMENTS**

4.1 **Environmental Monitoring**

4.1.1 **Environmental Monitoring Program**

The Operational Certificate holder must ensure that a Qualified Professional develops, maintains, conducts and reports to the Regional Manager, Environmental Protection a monitoring program to identify potential impacts to the environment and public health from the facility. The program must be designed to assess and identify:

- The design performance of the landfill including but not limited to compliance with Water Quality performance standards at the property boundary.
- Landfill leachate as a contaminant source.
- Surface Water Quality.

The monitoring program must address, but not be limited to relevant sections of the Landfill Criteria for Municipal Solid Waste and the Guidelines for Environmental Monitoring at Municipal Solid Waste Landfills. The Environmental Monitoring Program must take into consideration results from previous monitoring programs and any other investigations conducted at the site to ensure that early detection of potential impacts is possible.

The Environmental Monitoring Program must be reviewed and reported on annually. The need for subsequent increased or decreased monitoring must be assessed annually by the Operational Certificate Holder on the basis of available monitoring data. Based on the results of the monitoring program, or any other information relevant to the site, the Director may vary the frequency, location and analyses of environmental monitoring as warranted.

The Operational Certificate holder must ensure that groundwater monitoring wells are established and maintained to allow for uninterrupted monitoring as specified by the Environmental Monitoring Program. Background monitoring locations should be established and maintained. If progressive filling will result in the need for some background wells to be decommissioned, other background monitoring well locations should be identified in a timely manner to replace them. In the event that site hydrogeology restricts available locations for

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background groundwater monitoring wells, the use of data from other groundwater wells may be used provided they have been demonstrated as being suitable for the purpose of establishing background groundwater quality.

The location and installation of all monitoring wells must be specified and supervised by a Qualified Professional who is knowledgeable in the fields of Hydrogeology and Landfill Impact Assessment. The Operational Certificate holder must ensure that monitoring wells and other equipment are adequately secured and maintained, including provisions to ensure protection from damage due to weather, vehicles or vandalism. In the event of damage to the wells or monitoring equipment which could affect/compromise the integrity of monitoring data, the Operational Certificate holder must take immediate and necessary measures to ensure that conditions for uninterrupted monitoring are restored.

The Operational Certificate holder must maintain records of all monitoring program data and analyses and make these available for inspection upon request.

4.1.2 **Field Sampling Techniques**

Sampling must be carried out in accordance with the procedures described in the most recent edition of the "British Columbia Field Sampling Manual for Continuous Monitoring Plus the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment, and Biological Samples", or by suitable alternative procedures as authorized by the Director. A copy of the above manual may be purchased from the Queen's Printer Publications Centre, P. O. Box 9452, Stn. Prov. Gov't. Victoria, British Columbia, V8W 9V7 (1-800-663-6105 or (250) 387-6409).

Proper care should be taken in sampling, storing and transporting the samples to adequately control temperature and avoid contamination and breakage.

4.1.3 **Laboratory Analysis**

Analyses are to be carried out in accordance with procedures described in the most recent edition of the "British Columbia Environmental Laboratory Manual for the Analysis of Water, Wastewater, Sediment and Biological Materials", or by suitable alternative procedures as authorized by the Director. A copy of the above manual may be purchased from the Queen's Printer Publication Centre,

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for Director, *Environmental Management Act*
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P. O. Box 9452, Stn. Prov. Govt. Victoria, British Columbia, V8W 9V7 (1-800-663-6105 or (250) 387-6409).

4.2 **Reporting**

4.2.1 **Monitoring Event Reporting**

The Operational Certificate Holder must notify the Regional Manager Environmental Protection of the completion of a monitoring event at the landfill through a memorandum within 60 days of the end of each event. The memorandum must identify exceedances to the water quality criteria for surface and ground water and observed non-compliance with operational certificate requirements.

4.2.2 **Non-Compliance Reporting**

The Operational Certificate holder must notify the Regional Manager Environmental Protection by facsimile or email of any non-compliance with the requirements of this Operational Certificate. The Operational Certificate holder must identify the non-compliance, the cause of non-compliance and any remedial action to address the non-compliance.

4.2.3 **Wildlife Reporting**

The Operational Certificate holder must maintain an onsite log of any ongoing bear activity such as digging around the perimeter of the electric fencing or other attempts to penetrate the fencing, and any observations pertaining to wildlife intrusion attempts. Any penetrations of the fencing by bears should be immediately reported to the Conservation Officer Service (COS) via the Report All Poachers & Polluters reporting line at 1877 952 7277.

4.2.4 **Five Year Report**

The Operational Certificate holder must submit to the Director a report every five years by April 30 of the respective fifth year after the last report. This report must be prepared by a qualified professional and must include but not be limited to:

- a. an executive summary;
- b. A current topographic map detailing airspace consumption, on-site borrow pit changes and future developments;

Date issued: December 15, 2014



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for Director, *Environmental Management Act*
Southern Interior Region

- c. Volume and density analysis or an in-place material summary, updated estimates for the remaining capacity, site life, revised closure date for the current phase or sequence and revised closure date for the current landfill footprint;
- d. An update on the financial assurance mechanism including a statement of the current dollar value of the Closure Fund and the amount earmarked for the Landfill site;
- e. A detailed hydrogeological assessment of the site based on the previous five years monitoring data and other relevant information. The hydrogeological review must provide an update on the attenuative capacity of the site for contaminants of concern;
- f. Any proposed changes to the Design and Operations Plan and the Environmental Monitoring Program (EMP), with rationale for the changes and any changes to the closure or post-closure plans;
- g. A review of the preceding five years of operation or an operations update which summarizes landfill development work completed in the subject reporting years and work planned for the subsequent five years;
- h. A summary of any new information that could affect the facilities, plans, assessments, surveys, programs and reports;
- i. A statement regarding the facility's compliance with the objectives of the Regional Solid Waste Management Plan.
- j. Any additional information requested by the Director.

4.2.5 **Design & Operations Plan Review**

The Design and Operations plan must be reviewed every five years throughout the operating life of the landfill and updated to include at least the next five years of landfill operations. Updated plans must be prepared by a Qualified Professional. The review must take into account the information from the hydrogeological assessment specified in Section 4.2.3e. The Regional Manager, Environmental Protection may request additional reviews of the design based on the compliance history and design performance of the site.

4.2.6 **Annual Report**

The Operational Certificate holder must submit to the Director an Annual Report for the facility by April 30 each year. The report must include memorandum summarizing operational information and results of monitoring as per the Environmental Monitoring Program for the site. The report must include sample data sheet and the results of laboratory analysis.

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Southern Interior Region

This report must be prepared by a qualified professional and must include but not be limited to:

- a. an executive summary
- b. the type and tonnage of waste received, recycled, stored on-site and discharged/landfilled for the years reported;
- c. A review of the preceding year of operation or an operations update which summarizes landfill development work completed in the subject reporting year and work planned for the subsequent year.
- d. A summary of any new information that could affect the facilities, plans, assessments, surveys, programs and reports
- e. An outline of the current Environmental Monitoring Program and a compendium of all environmental monitoring data in accordance with requirements specified in the most recent version of Guidelines for Environmental Monitoring at Municipal Solid Waste Landfills and Landfill Criteria for Municipal Solid Waste. The annual report must document any effect of the discharge on the quality of the receiving environment using appropriate statistical and graphical analysis and include trend analyses, as well as an evaluation of the impacts of the discharges on the receiving environment must be included;
- f. A summary of significant occurrences or observations of wildlife (medium and large carnivores) at the landfill;
- g. A list of training programs completed for landfill operators during the previous year;
- h. Any additional information requested by the Director.

Annual Reporting information requirements specified under this clause may be included along with the five year report specified in clause 4.2.3 for every fifth year.

4.2.5 Reporting Format & Records Retention

All reports must be submitted, suitably formatted in electronic format only. The Operational Certificate Holder must maintain records of all monitoring data in perpetuity and must also ensure that the results of monitoring and analysis are submitted in electronic format suitable for entry into applicable provincial databases.

4.3 Notifications

The Operational Certificate Holder must notify stakeholders specified by the Director regarding exceedances beyond the BC Water Quality Guidelines at

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Southern Interior Region

groundwater monitoring wells located at the property boundary, if such exceedances can be attributed to the landfilling of waste.

5. CLOSURE & POST CLOSURE REQUIREMENTS

5.1 Closure & Post Closure Plan

A Closure Plan and Final Cover Design that meets or exceeds the requirements of the BC Landfill Criteria should be submitted to the Director at least 12 months prior to the closure of the landfill. The plan must also include a Post Closure Plan or Aftercare measures to be taken at the landfill. The post closure plan must be reviewed every five years throughout the post closure period.

Completion of closure works in accordance with the Closure Plan and Final Cover Design must be certified by a Qualified Professional within sixty days of the implementation of the Final Cover Design.

5.2 Closure Fund

The Operational Certificate holder must provide for the funding of progressive closure operations, final closure and operations beyond closure by maintaining a closure fund. The value of the closure fund must meet or exceed the estimated closure and post-closure costs as established in the approved Design and Operations Plan and updated in the annual report, plus a reasonable contingency for any remediation which may be required. Reported costs must be adjusted for inflation annually. Alternately, a closure and post-closure financial security acceptable to the Director may be built over time.

The Operational Certificate holder must determine and ensure that the closure fund is adequate by preparing annually a financial statement of the fund which must be made available to the Director upon request. The financial statement must report the accrued capital, interest and additions to the fund for the previous year and review the sufficiency of the fund and the rate of accrual in consideration of the projected costs of closure and post-closure obligations.

The Operations Certificate holder must take measures to ensure that the closure and post-closure funds will ultimately meet or exceed the estimated closure and post-closure costs and include a reasonable contingency for any remediation that may be required.

5.3 Site Decommissioning

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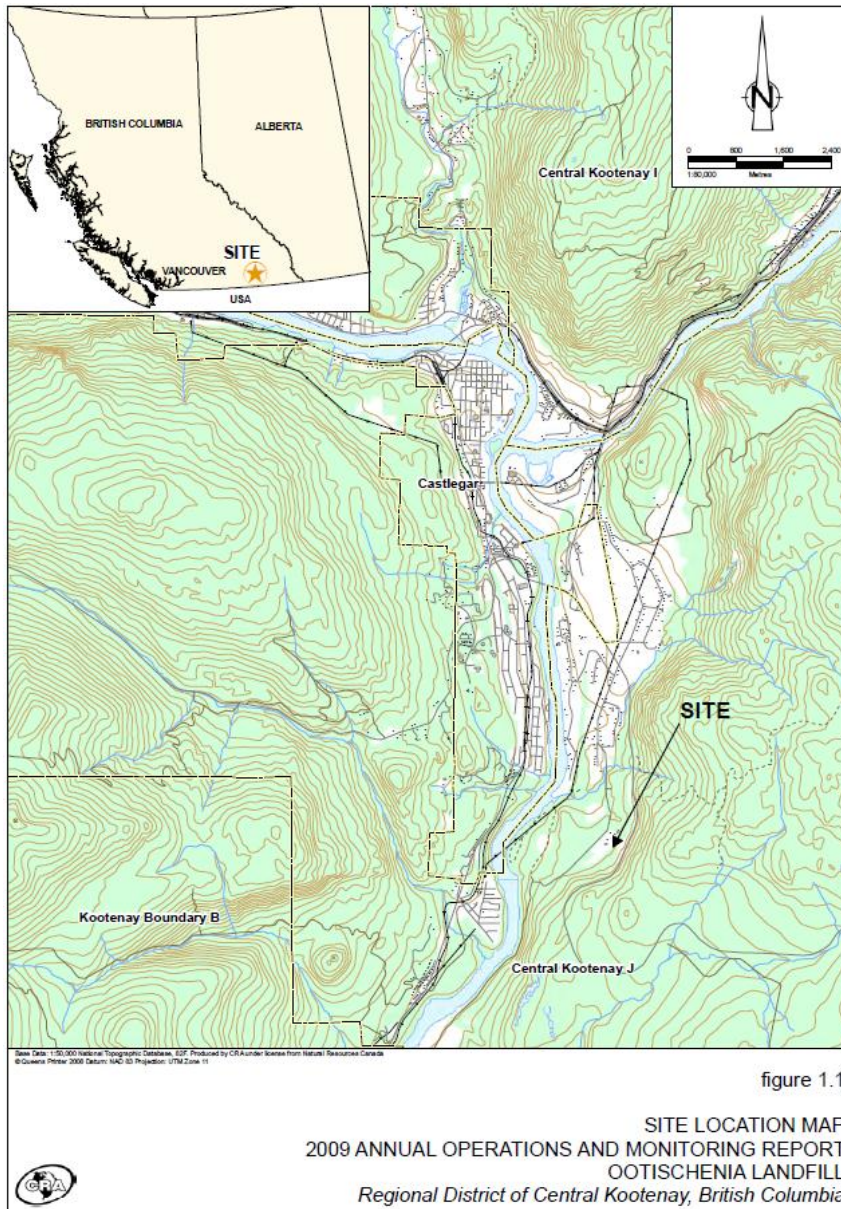
In accordance with Section 40 of the *Environmental Management Act* and Part 2 of the Contaminated Sites Regulation, the Operational Certificate holder must submit a site profile to the manager at least 10 days prior to decommissioning the facilities authorized in Section 1.

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Southern Interior Region

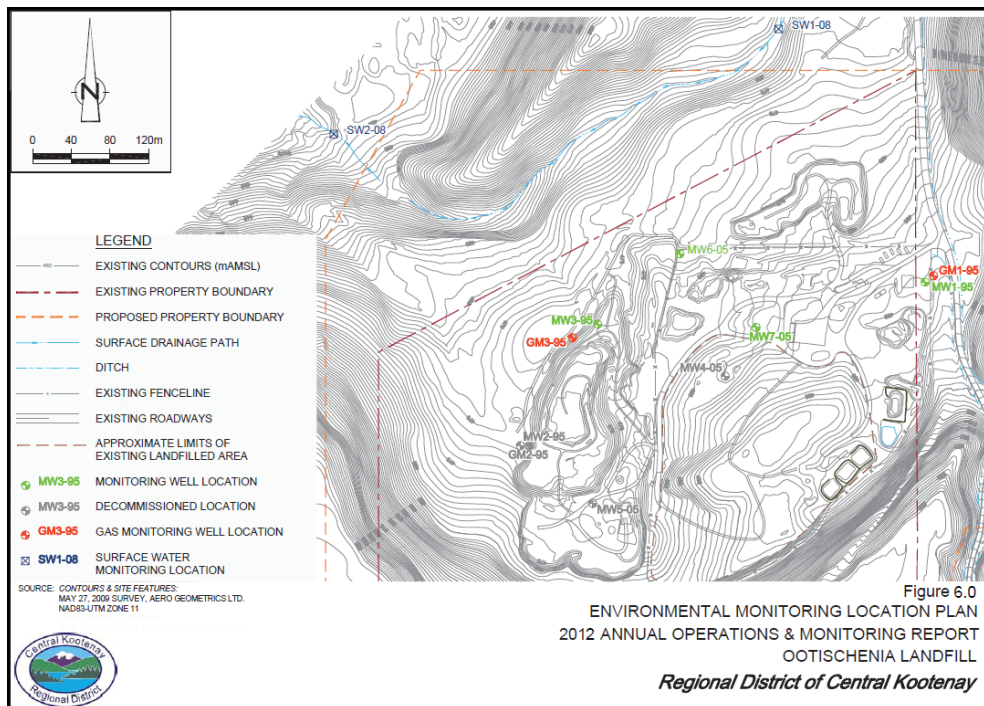
Location Map



Location: Lot 1, Sub Lot 23, D.L. 4598, Plan 6599, plus a portion of Sub Lot 23, Plan X-34, D.L. 4598

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Site Plan indicating monitoring locations

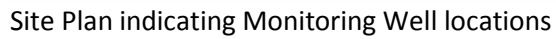


Site Plan showing phased filling

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Appendix B: 2025 Waste Stream Tonnage

WASTE STREAM TONNAGE

2025 Annual Operations and Monitoring Report

Ootischenia Landfill, Castlegar, BC

Waste Characterization	Units	2021	2022	2023	2024	2025
NON-RECYCLABLE WASTE						
Mixed Waste (received at Ootischenia)	tonnes	9,509.7	9,034.9	9,711.3	9,222.8	11,398.1
Mixed Waste (transferred from Slocan, Rosebery, Nakusp)	tonnes	400.7	640.3	848.2	725.5	871.6
Mixed Waste (transferred from Central sub-region)	tonnes	9,325.4	9,268.5	9,116.6	8,904.6	8,466.1
Asbestos	tonnes	198.6	165.2	115.6	83.4	408.4
Biosolids	tonnes	36.7	22.6	15.8	357.0	394.1
Bulky Waste	tonnes	10.3	10.1	11.2	6.3	20.7
Construction, Demolition, Renovation (CDR)	tonnes	1,896.2	1,794.8	1,557.8	1,602.1	1,471.2
Land-clearing	tonnes	53.5	30.9	53.0	36.1	46.3
Noxious Weeds	tonnes	10.8	14.5	7.5	5.1	5.4
Rubble	tonnes	149.4	204.0	207.7	160.0	260.1
Total Waste Landfilled	tonnes	21,591.2	21,185.8	21,644.7	21,102.9	23,342.0
RECYCLING/RE-PURPOSED MATERIALS⁽¹⁾						
ODS Appliances (MARR program)	tonnes	168.4	221.7	100.8	131.1	207.9
Non-ODS Appliances (MARR program)	tonnes	-	-	-	113.7	211.8
Yard & Garden Waste ⁽²⁾	tonnes	174.1	148.8	548.4	2,766.6	2,461.2
Scrap Metal ⁽²⁾	tonnes	264.4	256.1	340.9	663.5	669.8
Soils	tonnes	11,658.2	4,775.8	3,886.9	6,860.9	6,621.9
Tires ⁽²⁾	tonnes	4.4	4.4	6.4	16.2	40.8
ICI Cardboard ⁽³⁾	tonnes	150.0	161.1	161.8	156.6	206.8
RecycleBC ⁽³⁾	tonnes	1,439.6	1,493.7	1,545.4	1,372.1	1,332.2
EPR Products and Non-EPR HHW	tonnes	-	-	-	205.1	272.7
Organic Waste	tonnes	-	-	314.1	871.8	1032.8
Total Recycled/Re-purposed	tonnes	13,859.1	7,061.6	6,904.7	13,157.6	13,057.9
STOCKPILED MATERIALS						
Soils	tonnes	-	-	-	15,553.7	-
Wood ⁽²⁾	tonnes	706.5	649.3	1,019.7	1,773.1	703.1
Total Stockpiled	tonnes	706.5	649.3	1,019.7	17,326.8	703.1
TOTAL SOLID WASTE GENERATED⁽⁴⁾	tonnes	36,156.8	28,896.7	29,569.0	36,033.6	37,103.0
SEPTAGE⁽⁴⁾	m³	5,578	4,506	4,871	6,138	6,032
Operational Statistics						
Diversion rate ⁽⁵⁾	%	38	24	23	37	35
Total population served by landfill ⁽⁶⁾	persons	43,549	45,916	47,527	48,337	48,724
Average annual waste generated per person ⁽⁷⁾	kg/person/year	830	629	622	745	714
Average annual waste landfilled per person	kg/person/year	496	461	455	437	479

Notes:

Data was acquired from RDCK scale and ticket records for Ootischenia landfill wasteshed, which includes Nelson, Salmo, Kaslo, Castlegar, Slocan, Electoral Areas D, E, F, G, 85% of H, I, and J, and starting in 2023, also included New Denver and Silverton.

⁽¹⁾ Not all materials collected to go to the Ootischenia landfill, but data from entire wasteshed is included for accurate calculation of waste generation and/or diversion rates.

⁽²⁾ 2021-2023 values are underestimated as they only represent materials received at Ootischenia landfill and do not account for materials received at transfer stations within the Ootischenia landfill wasteshed.

⁽³⁾ RecycleBC and ICI cardboard collection programs started in mid-2020. Materials collected through these programs do not go to Ootischenia Landfill, but data is included for accurate calculation of waste generation and diversion rates.

⁽⁴⁾ Data for septage received at Ootischenia landfill only. Assumed septage density is 1 tonne per cubic metre.

⁽⁵⁾ 2021-2023 diversion rates have been updated from historical reports to reflect the change in material management for wood waste (stockpiled, not recycled or re-purposed).

⁽⁶⁾ 2021 population based on 2021 StatsCan census data, 2022-2025 population based on BC Stats. In 2023, the population was adjusted to also include New Denver and Silverton, as materials from Rosebery transfer station starting being transported to Ootischenia landfill instead of Nakusp landfill.

⁽⁷⁾ Does not include waste known to be generated out-of-region (i.e. soils).

Appendix C: Airspace and Life Expectancy

Appendix C

PROJECTED WASTE DISPOSAL RATES DESIGN AND OPERATIONS PLAN OOTISCHENIA LANDFILL SITE CASTLEGAR, BC

Year	Projected Population	Projected MSW (tonnes/year)	Projected Cummulative MSW Landfilled (m ³)
2005	16,161	10,453 ¹	-
2006	16,484	10,662	17,770
2007	16,814	10,875	35,896
2008	17,150	11,093	54,384
2009	17,493	11,315	73,241
2010	17,843	11,541	92,476
2011	18,200	11,772	112,096
2012	18,564	12,007	132,108
2013	18,935	12,247	152,520
2014	19,314	12,492	173,341
2015	19,700	12,742	194,578
2016	20,094	12,997	216,239
2017	20,496	13,257	238,334
2018	20,906	13,522	260,871
2019	21,324	13,793	283,858
2020	21,750	14,068	307,306
2021	22,185	14,350	331,222
2022	22,629	14,637	355,617
2023	23,081	14,929	380,499
2024	23,543	15,228	405,879
2025	24,014	15,533	431,767
2026	24,494	15,843	458,172
2027	24,984	16,160	485,106
2028	25,484	16,483	512,578
2029	25,993	16,813	540,600
2030	26,513	17,149	569,182
2031	27,044	17,492	598,335
2032	27,585	17,842	628,072
2033	28,136	18,199	658,404
2034	28,699	18,563	689,342
2035	29,273	18,934	720,899
2036	29,858	19,313	753,087
2037	30,456	19,699	785,919
2038	31,065	20,093	819,407
2039	31,686	20,495	853,565
2040	32,320	20,905	888,407
2041	32,966	21,323	923,945
2042	33,625	21,749	960,194
2043	34,298	22,184	997,168
2044	34,984	22,628	1,034,882
2045	35,683	23,081	1,073,349
2046	36,397	23,542	1,112,586
2047	37,125	24,013	1,152,608

NOTES:

(1) The 2005 MWS Landfilled volume is an actual measured value.

(2) Population is projected at 2 percent growth based on 2001 Stats Canada data

(3) MWS data is projected based on 0.65 tonnes of refuse per year per head of population

Appendix D: Interim Fill Plan



- Existing Contours
- South Access Rd
- North Access Rd
- Base Excavation Contour
- Top of Waste Boundary

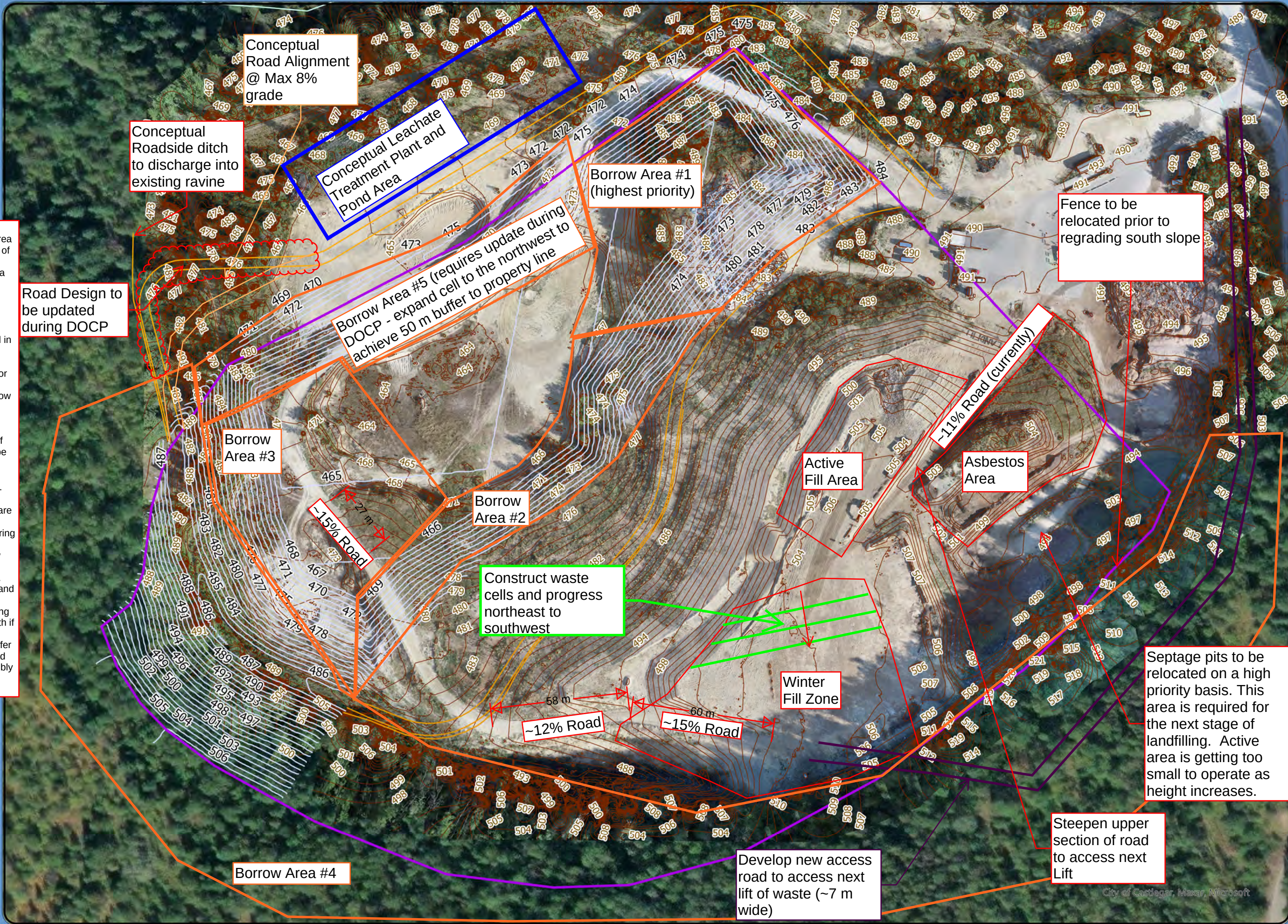
Notes:

1. Soil will be excavated from Borrow Area #2 in a push-down manner from the top of the slope.
2. Remove metal pile within Borrow Area #1 to access borrow. If metal is encountered during soil excavation activities, remove metal and continue excavation to conceptual base grades.
2. Waste will be encountered in Borrow Area #2 and #3. If waste is encountered in Area #3, stop excavation activities and determine how thick the waste is to determine if waste should be relocated or left in place.
3. Bedrock may be encountered in Borrow Area #3 and bedrock removal may be required for future cell development.
4. Prior to any excavation occurring in Borrow Area #4 along the slope south of the Landfill, the following items should be completed:
 - relocate fence;
 - obtain required permitting (i.e. archaeological permit);
 - confirm that no nesting birds are present;
 - preparing a detailed tree clearing and borrowing plan.
5. Relocate the road currently in Borrow Area #5 to the north of the borrow area once final design is confirmed in DOCP.
6. Final Landfill Footprint is conceptual and needs to be confirmed during DOCP development. Final Landfill footprint along the northwest edge to be expanded north if adequate space exists for leachate treatment and disposal, so that 50m buffer from the Property Line is achieved. Road design to be updated accordingly (possibly along top of berm).

Phone: 1-800-268-7325
www.rdck.bc.ca
maps@rdck.bc.ca

The mapping information shown are approximate representations and should be used for reference purposes only.
The Regional District of Central Kootenay is not responsible for any errors or omissions on this map.

OOT LANDFILL SITE MAP



City of Castlegar, Maxar, Microsoft

Appendix E: Environmental Monitoring Plan

ENVIRONMENTAL MONITORING PROGRAM
OOTISCHENIA LANDFILL

EMS Number	Location ID	On or Off Site	Area	Spring			Fall				NOTES
				General/ Organics/ Anions/ Nutrients	Dissolved Metals	Total Metals	General/ Organics/ Anions/ Nutrients	Dissolved Metals	Total Metals	PAHs/ VOCs*	
GROUNDWATER											
E232086	MW1-95	ON	cross-gradient	x	x		x	x			
E253791	MW06-05	ON	down-gradient	x	x		x	x		**	
E335945	MW07-05	ON	source	x	x		x	x		x	
E303871	MW14-01	ON	down-gradient	x	x		x	x			
E303870	MW14-02	ON	down-gradient	x	x		x	x			Well damaged, plan to repair or replace in 2026-27
E309167	MW17-01	ON	down-gradient	x	x		x	x			Well dry, plan to decommission and replace in 2026-27
E309168	MW17-02	ON	down-gradient	x	x		x	x			Well dry, plan to decommission in 2026-27
E309169	MW17-03	ON	down-gradient	x	x		x	x			
E323191	MW20-01	ON	down-gradient	x	x		x	x			
SURFACE WATER											
E335946	SW1-08	OFF	up-gradient	x	x	x	x	x	x		typically dry
E335947	SW2-08	OFF	down-gradient	x	x	x	x	x	x		typically dry

*if issues are identified, add analyses to nearby down-gradient wells the following year

**if insufficient water in MW7-05

Field measurements must be collected during each sampling event

Field Measurements
pH
temperature
conductivity
DO
ORP
turbidity
hydraulic levels

General
lab pH
hardness (as CaCO ₃ , from metals)
conductivity
total suspended solids (TSS)
total dissolved solids (TDS)
alkalinity
Organics
dissolved organic carbon (DOC)*
total organic carbon (TOC)
Anions/Nutrients
ammonia
bromide
chloride
fluoride
nitrate
nitrite
total Kjeldahl nitrogen (TKN)
sulphate

*SW only

ICP-MS Metals
aluminum
antimony
arsenic
barium
beryllium
bismuth
boron
cadmium
calcium
cesium
chromium
cobalt
copper
iron
lead
lithium
magnesium
manganese
mercury
molybdenum
nickel
phosphorus
potassium
rubidium
selenium
silicon
silver
sodium
strontium
sulfur
tellurium
thallium
thorium
tin
titanium
tungsten
uranium
vanadium
zinc
zirconium

VOCs
Benzene
Bromodichloromethane
Bromoform
Carbon Tetrachloride
Chlorobenzene
Dibromochloromethane
Chloroethane
Chloroform (trichloromethane)
Chloromethane (methyl chloride)
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
1,1-Dichloroethane
1,2-Dichloroethane
1,1-Dichloroethylene
cis-1,2-Dichloroethylene
trans-1,2-Dichloroethylene
Dichloromethane (methylene chloride)
1,2-Dichloropropane
cis-1,3-Dichloropropylene
trans-1,3-Dichloropropylene
1,3-Dichloropropene (cis & trans)
Ethylbenzene
Methyl t-butyl ether (MTBE)
Styrene
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethylene
Toluene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethylene
Trichlorofluoromethane
Vinyl Chloride
ortho-Xylene
meta- & para-Xylene
Xylenes
4-Bromofluorobenzene (SS)
1,4-Difluorobenzene (SS)

PAHs
Acenaphthene
Acenaphthylene
Acridine
Anthracene
Benz(a)anthracene
Benzo(a)pyrene
Benzo(b&j)fluoranthene
Benzo(b+j+k)fluoranthene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
Chrysene
Dibenz(a,h)anthracene
Fluoranthene
Fluorene
Indeno(1,2,3-c,d)pyrene
1-Methylnaphthalene
2-Methylnaphthalene
Methylnaphthalene, 1+2-
Naphthalene
Phenanthrene
Pyrene
Quinoline
Chrysene d12
Naphthalene d8
Phenanthrene d10

Appendix F: 2025 Annual Environmental Monitoring Program Report



Annual Environmental Monitoring Program Ootischenia Landfill

Prepared for:

Regional District of Central Kootenay

202 Lakeside Drive

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March 27, 2026

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Project Number 2016-503

TABLE OF CONTENTS

Table of Contents	i
List of Tables	ii
List of Appendices	ii
1 Introduction	1
1.1 Environmental Monitoring Program	1
1.2 Site Overview	2
1.3 Applicable Water Quality Standards	2
2 Results and Assessment.....	3
2.1 Field Monitoring.....	3
2.1.1 Landfill Gas Monitoring.....	3
2.1.2 Hydraulic Monitoring.....	3
2.2 Quality Assurance/Quality Control Results	4
2.3 Groundwater	5
2.3.1 Background Groundwater Quality.....	5
2.3.2 Groundwater Quality at the Source Concentration Well	6
2.3.3 Leachate Indicator Parameters	6
2.3.4 Spatial Trends.....	6
2.3.5 Temporal Trends	7
2.3.6 Volatile Organic Compound (VOC) and Polyaromatic Hydrocarbon (PAH) Results	8
2.3.7 Groundwater Compliance.....	8
2.4 Surface Water	10
2.4.1 Background Surface Water Quality	10
2.4.2 Surface Water Compliance	10
3 Recommendations.....	10
4 Closure	11
5 References	12

LIST OF TABLES

Table 1: % RPD Summary for 2025	4
Table 2: Field Blank Summary for 2025	5
Table 3. Spatial Trends.....	7
Table 4. Temporal Trends	7
Table 5. Groundwater Compliance Well Summary	8

LIST OF APPENDICES

Appendix 1. 2025 Environmental Monitoring Program
Appendix 2. Site Map
Appendix 3. Field Monitoring Summary
Appendix 4. Analytical Results Summary
Appendix 5. Trend Graphs
Appendix 6. Laboratory Certificates of Analysis

1 INTRODUCTION

The Regional District of Central Kootenay's (RDCK's) Ootischenia Landfill (the "Landfill") has been in operation since 1968. Under the Operational Certificate 17126, an Annual Report for the Landfill must include an "outline of the current Environmental Monitoring Program and a compendium of all environmental monitoring data in accordance with requirements specified in the most recent version of Guidelines for Environmental Monitoring at Municipal Solid Waste Landfills and Landfill Criteria for Municipal Solid Waste" (BC MoE 2014).

1.1 Environmental Monitoring Program

Groundwater sampling was conducted in accordance with the most recent version of the environmental monitoring program (Appendix 1). The monitoring program includes nine groundwater monitoring well locations and two surface water locations as follows (refer to the Site Map in Appendix 2):

- One cross-gradient well (MW1-95),
- One source concentration well (MW07-05), and
- Seven downgradient wells (MW06-05, MW14-01, MW14-02, MW17-01, MW17-02, MW17-03, and MW20-1), and
- One upstream surface water location (SW1-08) and one downstream surface water location (SW2-08).

Groundwater sampling was conducted in May and October. During each monitoring event, the appropriate field data (e.g. headspace gas analysis, water levels, water flow, purging information, and field parameters) were recorded by the environmental technician. Water quality samples were collected in laboratory supplied bottles and submitted under Chain of Custody (COC) protocols for analytical analysis to ALS Environmental (Burnaby, BC).

No surface water samples were obtained in 2025 as both surface water sampling sites were dry during both sampling events. Well MW14-02 was only sampled in the spring. Sampling with a submersible bailer is still possible but it is onerous due to the amount of sand entrained in the purge water.

The results of the 2025 water quality monitoring program were evaluated relative to the water quality results over the past five years, and in consideration of the current understanding of the hydrogeological/hydrological site conditions (SLR 2024), applicable regulatory criteria, background conditions, assessment parameters indicative of landfill impacts, as well as spatial and temporal trends.

1.2 Site Overview

The Ootischenia Landfill is located approximately seven kilometres southeast of the City of Castlegar, BC, on the east side of the Columbia River. The landfill is located in a northwest facing bowl and slopes towards Cai Creek, approximately 50 m north of the site boundary, and the Columbia River, approximately ~240 m west of the site at its closes point. Cai Creek is an ephemeral, losing stream that recharges groundwater and only flows during runoff events. Groundwater flow along the axis of Cai Creek is expected to be westward, towards the Columbia River.

The overburden at the Site is composed primarily of permeable sands and gravels (AMEC Foster Wheeler 2016). These are fluvial deposits derived from the Columbia River. The thickness of the sand and gravel sequence at the Site ranges from approximately 27 m to 72 m. Bedrock is present in a bowl-shaped depression beneath the Site. Wells MW1-95 and MW17-03 are completed in bedrock. The remaining wells are completed in the sand and gravel overburden (SLR 2024).

The predominant groundwater flow direction in the overburden sediment and in the bedrock beneath the Site is in a northwesterly direction, towards the Columbia River (SLR 2024).

1.3 Applicable Water Quality Standards

The Operational Certificate (OC) for the Ootischenia Landfill states that “groundwater and surface water quality must not decrease beyond that specified by the BC Water Quality Guidelines (WQGs) or other appropriate criteria as may be specified by the Director at and beyond the landfill property boundary” (BC MoE 2014). Water quality guidelines are used by the Province to protect water values for different uses, including aquatic life, wildlife, drinking water sources, agriculture (livestock watering and irrigation), and recreation (BC MWLRS 2025a, 2025b and BC MoECCS 2019, 2020). Many of these are only applicable to surface water.

Analytical results for groundwater were compared to the *British Columbia Contaminated Sites Regulation* (BC 2025) Schedule 3.2 generic numerical standards, which include standards for drinking water (DW), aquatic life (AW), irrigation (IW) and livestock (LW) uses. The CSR standards are designed for application to groundwater data, are legally enforceable under the *BC Environmental Management Act*, and the most recent hydrogeological review (SLR 2024) recommends that the CSR AW and DW standards be used to assess groundwater quality. Protocol 21 for Contaminated Sites – Water Use Determination (BC MoECCS 2017) provides a framework for identifying what water uses to apply to a site.

- The CSR drinking water standard applies as one well used for water supply is reported within 500 m of the landfill, and because an aquifer that could be used for a future drinking water supply underlies the site.
- The CSR aquatic life standard applies to the groundwater wells as they are located within 500 m of an aquatic receiving environment. Cai Creek, the nearest surface water feature, is ~50 m north of the site boundary. The Columbia River is ~240 m west of the site at its closest point (SLR 2024).
- The irrigation and livestock standards are not applied as there are no groundwater wells or surface water intakes currently used for irrigation or livestock watering within 500 m of the site.

The above standards are herein referred to as the *Criteria*.

2 RESULTS AND ASSESSMENT

2.1 Field Monitoring

2.1.1 Landfill Gas Monitoring

The composition of gas in the headspace of each groundwater monitoring well was sampled prior to hydraulic monitoring and water quality monitoring. The groundwater monitoring wells do not have a dedicated gas sampling port, so PVC tubing was threaded into the monitoring well (~3 m deep) and the top of the well was sealed with plastic during the analysis. The headspace gas monitoring results are presented in Appendix 3.

In all of the wells methane was well below the 'hazardous condition' limit for landfills (<25 % LEL CH₄ in facility structures and <100 % LEL CH₄ in soils at the property boundary) (BC MoE 1996). No methane was detected in any of the wells in May 2025. In September, methane was detected at very low concentrations (0.1 % by volume) in wells MW17-03 and MW07-05 and not detected in the other wells. No H₂S was detected in any of the wells in 2025.

2.1.2 Hydraulic Monitoring

The depth to groundwater in metres below the top of riser (m BTOR) was measure biannually in 2025 (Appendix 3). Groundwater depths ranged from 38.69 m BTOR (MW1-95) to 60.90 m BTOR (MW07-05) and groundwater fluctuations observed during the year ranged from 0.54 m (MW17-03) to 1.49 m (MW07-05). The depths to groundwater for MW1-95, MW06-05, MW07-05, MW14-01, MW17-03, and MW20-1 were consistent with recent observations (last 5 years), but the depth to water in MW14-01 was measured at a historical low in 2025. Wells MW17-01 and MW17-02 have been dry since 2019 and well MW14-02 appears to be filling up with sand.

2.2 Quality Assurance/Quality Control Results

To ensure adequate quality control for water quality monitoring samples, the following field quality assurance/quality control (QA/QC) practices were employed:

- Field sampling activities were performed by qualified and trained personnel.
- Laboratory supplied clean bottles were used for sample collection.
- QA/QC sampling included field duplicates and field blanks.
- Standardised COC forms were used for sample submission.

Two duplicate samples were collected from the Ootischenia Landfill during the 2025 sampling program. Duplicate samples provide an estimate of the overall precision of field sampling and laboratory analysis. The similarity of field duplicates was evaluated by calculating the relative percent differences (% RPDs) for each parameter pair. An RDP of <20% is considered acceptable. The % RPD is calculated as follows, where v_1 and v_2 are the results for a parameter:

$$\% \text{ RPD} = |v_1 - v_2| / ((v_1 + v_2) / 2) \times 100$$

Table 1: % RPD Summary for 2025

Total No. of Parameters	No. of % RPDs Calculated	No. of % RPDs > 20 %
111	72	12

A total of 111 parameters pairs were considered for calculation of % RPDs over the four sampling events. However, only results for 72 of the parameter pairs were quantified at or above the reportable detection limit (RDL). Where both of the values were less than the RDL, the results were considered to be the same.

Of the 72 parameter pairs for which the % RPD was calculated, twelve exceeded the 20 % “acceptable” level (Table 1, Appendix 4):

- Nine of these elevated % RPDs occurred for parameter pairs where both of the results were quantified within five times the RDL. In these situations, the 20 % acceptable standard is too stringent and % RPDs often exceed 20 %.
- The remaining three high % RPDs occurred for dissolved copper, manganese, and zinc in the H2 duplicate pair. These are discussed in Appendix 4.

Field blanks assess for contamination in the field and document the effectiveness of cleaning and decontamination procedures for field equipment between samples. One field blank was collected

following sampling at the Ootischenia Landfill in October. This field blank was collected using laboratory-supplied de-ionized water that was exposed to the sampling environment and handled in the same manner as all other field samples, including a pass through the same equipment used to collect the field samples.

Table 2: Field Blank Summary for 2025

Total No. of Parameters	No. of Parameters >DL	No. of Parameters <5x DL	Remainder
54	11	9	2

Of the 54 parameters measured, 11 (20 %) parameters were measured at a level greater than the detection limit. ALS uses very low detection limits, and many parameters detected at or near the detection limits are not necessarily representative of contamination from field procedures. Where parameters were measured at levels less than 5x the detection limit (9 parameters), no further discussion was deemed necessary. Where field blank parameters were measured at levels greater than 5x the detection limit, the potential for cross-contamination was investigated (refer to Appendix 4).

Two parameters (4 %) was measured at levels greater than 5x the detection limit in the field blank. These elevated parameters do not affect interpretation of the results as they were lower than all of the relevant groundwater samples and lower than the relevant *Criteria*.

The 2025 sampling QA/QC program provides assurance that field techniques used were adequate to produce results that can be reliably compared to the *Criteria*.

2.3 Groundwater

2.3.1 Background Groundwater Quality

There are no upgradient wells to monitor background groundwater quality. MW1-95 is located cross-gradient to the existing refuse limits based on the current understanding of the physical setting of the Site and is not located within the landfill groundwater plume base on the current understanding of groundwater flow (SLR 2024). MW1-95 has been used to characterize background water quality at the Ootischenia Landfill; however, as it is screened within bedrock, water quality may not be representative of background water quality in the overburden, within which the source concentration and most of the downgradient monitoring wells are screened.

Groundwater results for this well were within the historical range and were below the *Criteria* for all parameters.

2.3.2 *Groundwater Quality at the Source Concentration Well*

The results of groundwater sampling at monitoring well MW07-05 were used to evaluate leachate impacts directly downgradient of the existing refuse limits and to help identify assessment parameters. Groundwater quality at MW07-05 met all of the CSR AW and DW standards for all parameters monitored in 2025 with the exception of the following:

- Cobalt in both May and October samples was higher than the DW standard of 1 µg/L.
- Lithium in the sample collected in May was higher than the DW standard of 8 µg/L.
- Manganese in the sample collected in October was higher than the DW standard of 1500 µg/L.

This data is consistent with recent results (2023, 2024) as well as results from before 2015. Levels of all three parameters were lower between 2015 and 2020.

2.3.3 *Leachate Indicator Parameters*

Ammonia, chloride, sodium, dissolved iron, and dissolved manganese are used to assess spatial and temporal trends at the Ootischenia Landfill. These parameters are typically found in leachate at elevated levels, are susceptible to migration, are associated with leachate plume evolution, and are present at low levels at the cross-gradient monitoring locations.

Historical trend graphs for these parameters over the past 5 years are presented in Appendix 5.

2.3.4 *Spatial Trends*

Groundwater quality at the downgradient overburden wells (MW06-05, MW14-01, MW14-02, MW17-01, MW17-02, and MW20-1) and the downgradient bedrock well, MW17-03, were compared to groundwater quality at MW07-05 (source concentration well) and to the cross-gradient bedrock well, MW1-95, to assess the spatial distribution of the leachate indicator parameters. Spatial observations are summarized in Table 3.

Table 3. Spatial Trends

Parameter	Observations	Comments on Trends
Ammonia	Highest at the source (MW07-05) and at wells MW14-01 and MW20-1.	
Chloride	Highest at the source (MW07-05) and at well MW14-02. Lowest at the cross gradient well (MW1-95) and the downgradient bedrock well (MW17-03). Other wells lie in between.	Downgradient migration appears to be occurring in the overburden.
Sodium	Highest at source (MW07-05) and at well MW14-02. The other wells have similar concentrations around 5,000-11,500 µg/L).	Downgradient migration appears to be occurring in the overburden.
Iron	Highest at MW14-01 by generally an order of magnitude relative to all of the other wells.	
Manganese	Highest at the source (MW07-05). Levels in MW14-01 are slightly higher than in the other downgradient wells.	

2.3.5 Temporal Trends

Groundwater quality data from the past 5 years was reviewed to identify temporal trends in groundwater quality. These trends are summarized in Table 4.

Table 4. Temporal Trends

Location	Parameter	5-Year Temporal Trends			Notes
		Decreasing	Variable	Increasing	
Background (MW1-95)	Ammonia				Stable and low.
	Chloride				Stable and low.
	Sodium				Stable and low.
	Iron				Stable and low.
	Manganese				Stable and low.
Source (MW07-05)	Ammonia			MW07-05	Increasing, may be seasonally variable.
	Chloride		MW07-05		Ranges between ~ 25 and 60 mg/L.
	Sodium		MW07-05		
	Iron				Consistently low
	Manganese				Increasing in 2022 but now appears stable.
Down-gradient	Ammonia				Stable and low.
	Chloride		MW14-02		Stable and low. Most variable at MW14-02.
	Sodium		MW14-02		Higher concentrations observed in the spring.
	Iron			MW14-01	MW14-01 appears to be stabilising.
	Manganese			MW14-01	Increasing trend over the past five years.

2.3.6 Volatile Organic Compound (VOC) and Polyaromatic Hydrocarbon (PAH) Results

In October 2025, samples were collected at groundwater well MW07-05 for analysis of VOCs and PAHs. Analytical results are presented in Appendix 4. All of the VOCs and PAHs were all quantified below the *Criteria*.

Most of the VOC and PAH results were also quantified below detection limits. *Cis*-1,2-dichloroethylene and vinyl chloride were both quantified within 5x the detection limit in MW07-05.

2.3.7 Groundwater Compliance

Section 4.1 of the Landfill Criteria for Municipal Solid Waste states that: “At a minimum, the appropriate water quality criteria must be satisfied at and beyond the landfill site boundary, or 150 m from the landfill footprint, whichever is closer” (BC MoE 2016). Groundwater compliance is assessed at downgradient wells nearest to the site boundary (MW14-01, MW14-02, MW17-01, MW17-02, MW17-03, and MW20-1). Groundwater quality was compared to the BC CSR Schedule 3.2 AW and DW numerical standards. Note that the CSR DW standards are designed for unfiltered samples obtained at the point of consumption (total substance concentrations) (BC 2025). The drinking water standards have been applied to the dissolved substance concentrations for the Ootischenia Landfill to be more representative of in-situ aquifer conditions.

Table 5 summarizes the *Criteria* exceedances observed in the compliance wells in 2025. Well MW14-02 exceeded the BC CSR DW standard for cobalt of 1 µg/L in June; this well was not sampled in October. The analytical results for cobalt in MW14-02 are higher than any previous result. Well MW20-01 exceeded the BC CSR DW standard for lithium of 8 µg/L in May and October, and MW14-01 also exceeded this standard in May. The analytical results for lithium in wells MW14-01 and MW20-1 are consistent with previous results. Trend graphs for these parameters for all wells from 2006 to the present are provided in Figure 1 and Figure 2.

Table 5. Groundwater Compliance Well Summary

		CSR DW	MW14-01 28/5/2025	MW14-01 21/10/2025	MW14-02 09/06/2025	MW14-02 21/10/2025	MW20-01 28/5/2025	MW20-01 21/10/2025
Cobalt	µg/L	1	0.20	0.31	6.18	No sample	0.44	0.49
Lithium	µg/L	8	8.5	8.0	7.0	No sample	9.4	9.4

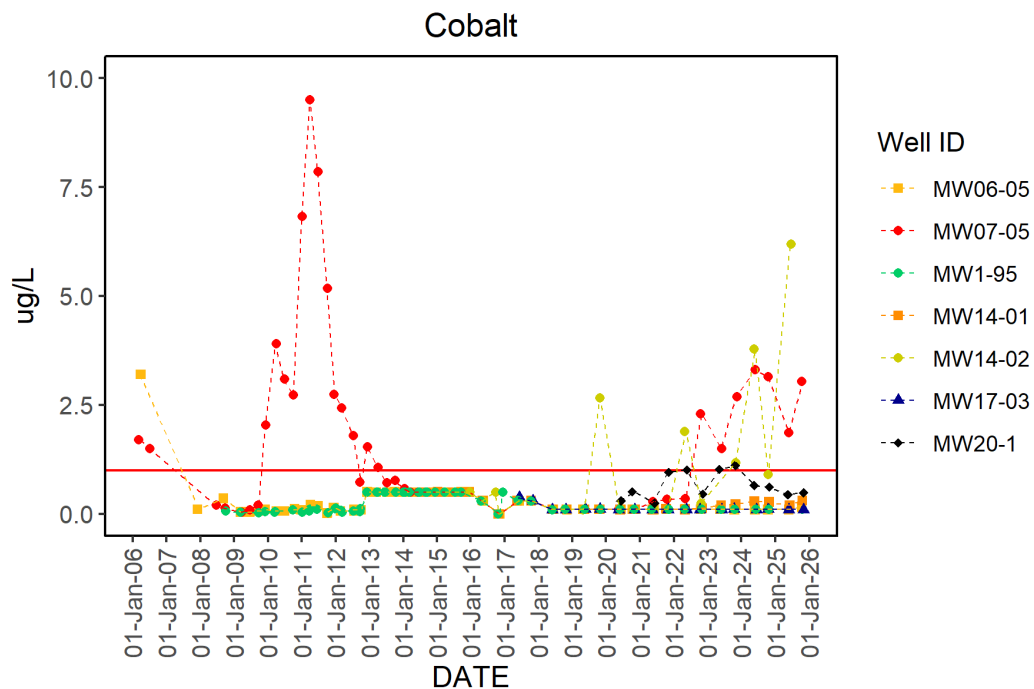


Figure 1. Dissolved cobalt concentrations over time (2007-2025). The red line corresponds to the BC CSR DW standard of 1 µg/L.

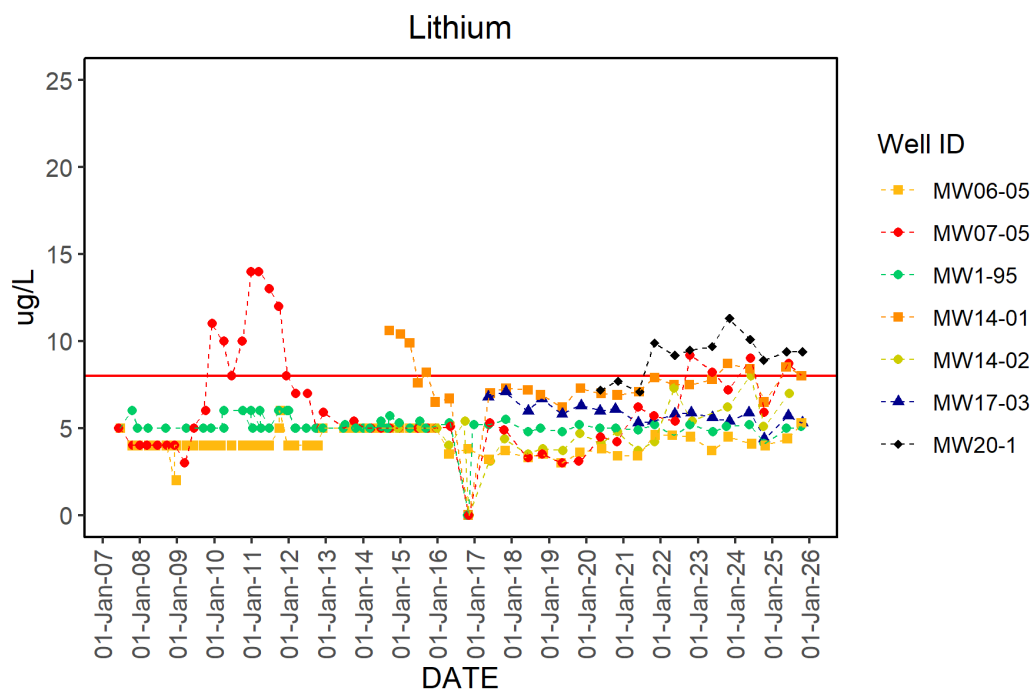


Figure 2. Dissolved lithium concentrations over time (2007-2025). The red line corresponds to the BC CSR DW standard of 8 µg/L.

2.4 Surface Water

2.4.1 Background Surface Water Quality

Surface water location SW1-08, situated upstream along Cai Creek, is considered representative of background surface water chemistry for the purpose of annual operations and monitoring reports.

No surface water was collected at SW1-08 in 2025 as the location was dry during both sampling events.

2.4.2 Surface Water Compliance

No surface water was collected at SW2-08 in 2025 as the location was dry during both sampling events. SW2-08 has been dry since 2014.

3 RECOMMENDATIONS

With respect to sampling, the following is recommended:

- Well MW14-02 is damaged as the PVC riser is broken, allowing sand to enter the well. This well should be repaired or replaced.
- Wells MW17-01 and MW17-02 are dry. If groundwater levels remain low, these wells may need to be redrilled deeper.
- Cai Creek is dry except during runoff events. Sampling at alternative times of the year (Dec-Mar) is recommended to get a better idea of the current flow regime and potentially obtain samples.

4 CLOSURE

This report was prepared by Jennifer Ross and Ico de Zwart of Masse Environmental Consultants Ltd. on March 27, 2026, for the Regional District of Central Kootenay. Both Jennifer and Ico are registered in good standing with the Association of the Chemical Profession of British Columbia. Ico is also a Registered Professional Biologist in good standing with the College of Applied Biology.

We trust the information provided in this report meets your current requirements. If you have any questions or require any further information do not hesitate to contact the undersigned.

Sincerely,



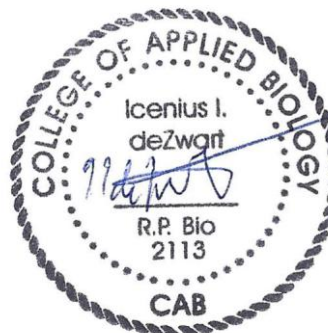
Jennifer Ross, M.Sc., P.Chem.



and



Ico de Zwart, PH.D., P.Chem., R.P.Bio.



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APPENDIX 1. 2025 ENVIRONMENTAL MONITORING PROGRAM

ENVIRONMENTAL MONITORING PROGRAM
OOTISCHENIA LANDFILL

EMS Number	Location ID	On or Off Site	Area	Spring			Fall				NOTES
				General/ Organics/ Anions/ Nutrients	Dissolved Metals	Total Metals	General/ Organics/ Anions/ Nutrients	Dissolved Metals	Total Metals	PAHs/ VOCs*	
GROUNDWATER											
E232086	MW1-95	ON	cross-gradient	x	x		x	x			
E253791	MW06-05	ON	down-gradient	x	x		x	x		**	
E335945	MW07-05	ON	source	x	x		x	x		x	
E303871	MW14-01	ON	down-gradient	x	x		x	x			
E303870	MW14-02	ON	down-gradient	x	x		x	x			Well damaged, will be repaired or replaced in 2025
E309167	MW17-01	ON	down-gradient	x	x		x	x			Well dry, will be decommissioned and replaced in 2025
E309168	MW17-02	ON	down-gradient	x	x		x	x			Well dry, will be decommissioned in 2025
E309169	MW17-03	ON	down-gradient	x	x		x	x			
E323191	MW20-01	ON	down-gradient	x	x		x	x			
SURFACE WATER											
E335946	SW1-08	OFF	up-gradient	x	x	x	x	x	x		typically dry
E335947	SW2-08	OFF	down-gradient	x	x	x	x	x	x		typically dry

*if issues are identified, add analyses to nearby down-gradient wells the following year

**if insufficient water in MW7-05

Field measurements must be collected during each sampling event

Field Measurements
pH
temperature
conductivity
DO
ORP
turbidity
hydraulic levels

General
lab pH
hardness (as CaCO ₃ , from metals)
conductivity
total suspended solids (TSS)
total dissolved solids (TDS)
alkalinity
Organics
dissolved organic carbon (DOC)*
total organic carbon (TOC)
Anions/Nutrients
ammonia
bromide
chloride
fluoride
nitrate
nitrite
total Kjeldahl nitrogen (TKN)
sulphate

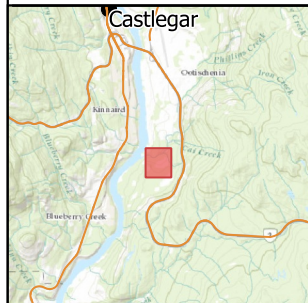
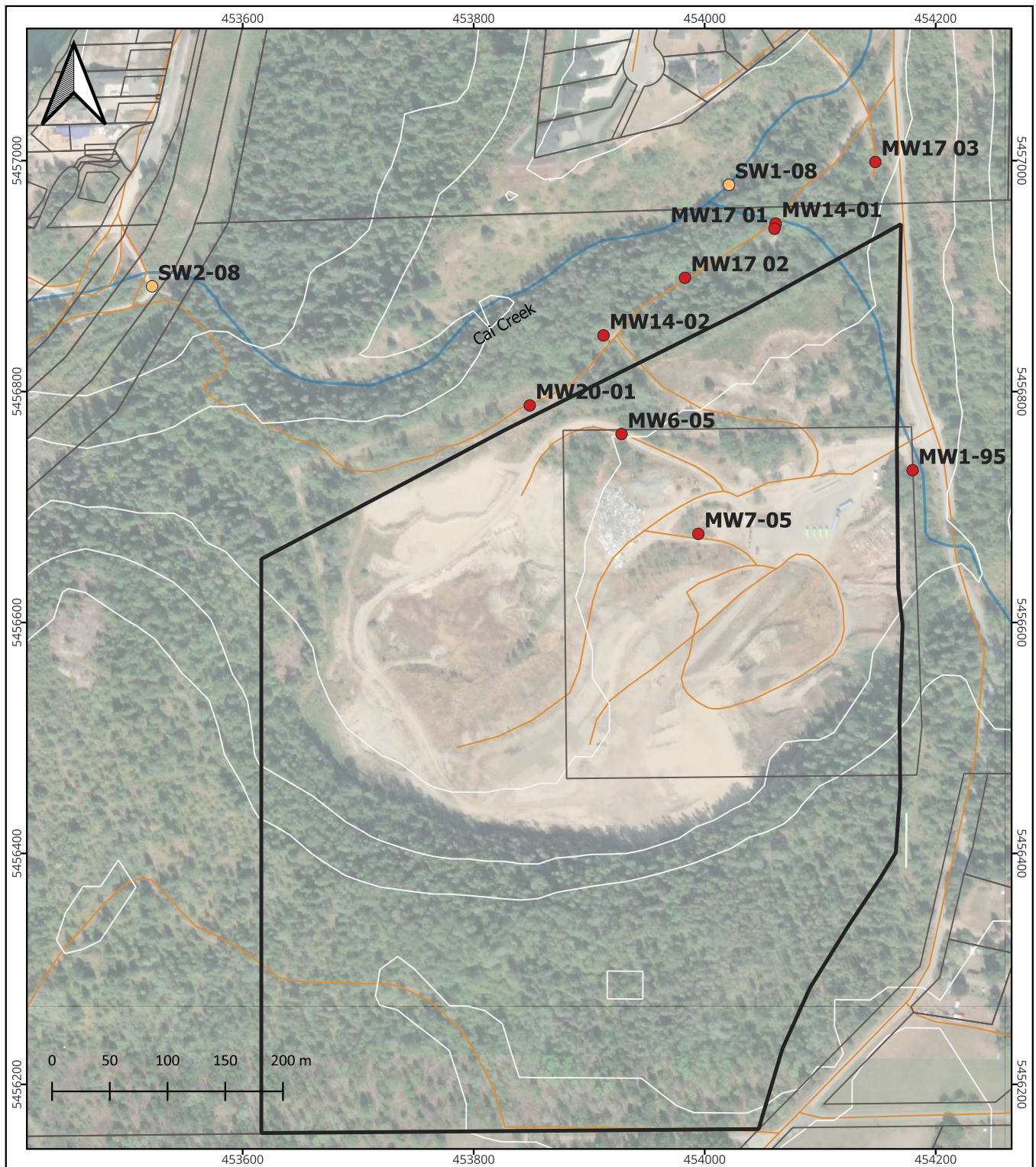
*SW only

ICP-MS Metals
aluminum
antimony
arsenic
barium
beryllium
bismuth
boron
cadmium
calcium
cesium
chromium
cobalt
copper
iron
lead
lithium
magnesium
manganese
mercury
molybdenum
nickel
phosphorus
potassium
rubidium
selenium
silicon
silver
sodium
strontium
sulfur
tellurium
thallium
thorium
tin
titanium
tungsten
uranium
vanadium
zinc
zirconium

VOCs
Benzene
Bromodichloromethane
Bromoform
Carbon Tetrachloride
Chlorobenzene
Dibromochloromethane
Chloroethane
Chloroform (trichloromethane)
Chloromethane (methyl chloride)
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
1,1-Dichloroethane
1,2-Dichloroethane
1,1-Dichloroethylene
cis-1,2-Dichloroethylene
trans-1,2-Dichloroethylene
Dichloromethane (methylene chloride)
1,2-Dichloropropane
cis-1,3-Dichloropropylene
trans-1,3-Dichloropropylene
1,3-Dichloropropene (cis & trans)
Ethylbenzene
Methyl t-butyl ether (MTBE)
Styrene
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethylene
Toluene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethylene
Trichlorofluoromethane
Vinyl Chloride
ortho-Xylene
meta- & para-Xylene
Xylenes
4-Bromofluorobenzene (SS)
1,4-Difluorobenzene (SS)

PAHs
Acenaphthene
Acenaphthylene
Acridine
Anthracene
Benz(a)anthracene
Benzo(a)pyrene
Benzo(b&j)fluoranthene
Benzo(b+j+k)fluoranthene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
Chrysene
Dibenz(a,h)anthracene
Fluoranthene
Fluorene
Indeno(1,2,3-c,d)pyrene
1-Methylnaphthalene
2-Methylnaphthalene
Methylnaphthalene, 1+2-
Naphthalene
Phenanthrene
Pyrene
Quinoline
Chrysene d12
Naphthalene d8
Phenanthrene d10

APPENDIX 2. SITE MAP



Ootischenia Landfill Environmental Monitoring Site Plan

- | | |
|---------------------------|---------------------|
| Site Boundary | Property boundaries |
| Sampling locations | |
| Surface water | Roads |
| Well | |



Map Date: 2026-03-26
 Projection: NAD83 / UTM zone 11N
 Project #: 2016-503
 Main Map Scale: 1:5000
 Overview Map Scale: 1:250000

APPENDIX 3. FIELD MONITORING SUMMARY

Regional District of Central Kootenay
Gas Analysis - 2025
Ootischenia Landfill, Castlegar, BC

Date (DD/MM/YYYY)	EMS	Site ID	Sampled	Barometric Pressure (mm Hg)	CH ₄ (%)	Calculated LEL CH ₄ (%) ¹	CO ₂ (%)	O ₂ (%)	Gas Balance	CO (ppm)	H ₂ S (ppm)	Comments
26/05/2025	E232086	MW1-95	Y	28.27	0.0	0	0.8	19.7	79.6	0	0	Air inside well pressurized (positive pressure)
26/05/2025	E309169	MW17-03	Y	28.31	0.0	0	0.1	20.7	79.2	0	0	
26/05/2025	E303871	MW14-01	Y	28.30	0.0	0	0.3	19.7	80.0	0	0	
26/05/2025	E323191	MW20-1	Y	28.26	0.0	0	0.3	20.0	79.7	1	0	
26/05/2025	E253791	MW06-05	Y	28.29	0.0	0	3.1	11.5	85.4	0	0	
26/05/2025	E335945	MW07-05	Y	28.29	0.0	0	0.1	20.3	79.7	0	0	
	E309167	MW17-01	N			0						
	E309168	MW17-02	N			0						
	E303870	MW14-02	N			0						
14/10/2025	E232086	MW1-95	Y	28.51	0.0	0	0.8	20.5	78.7	0	0	
14/10/2025	E309169	MW17-03	Y	28.50	0.1	2	0.1	21.4	78.4	0	0	
14/10/2025	E303871	MW14-01	Y	28.49	0.0	0	0.5	20.3	79.2	0	0	
14/10/2025	E309167	MW17-01	Y	28.57	0.0	0	0.1	21.5	78.4	0	0	
14/10/2025	E309168	MW17-02	Y	28.57	0.0	0	0.1	21.7	78.2	0	0	
14/10/2025	E303870	MW14-02	Y	28.57	0.0	0	0.1	21.6	78.2	0	0	
14/10/2025	E323191	MW20-1	Y	28.57	0.0	0	0.2	21.4	78.4	0	0	
14/10/2025	E253791	MW06-05	Y	28.57	0.0	0	0.1	18.6	80.3	0	0	
14/10/2025	E335945	MW07-05	Y	28.56	0.1	2	0.4	20.5	79	1	0	

¹ LEL CH₄ (%) is calculated from the measured volume of CH₄ in air (%) using the following equation: (CH₄/5)x100.

General Comments

All wells have been fitted with sealable gas caps. These were observed to be in place and functional.
Gas monitoring was completed using a GEM 5000 Plus instrument operated in gas analyzer mode.

Regional District of Central Kootenay
2025 Hydraulic Monitoring Results
Ootischenia Landfill, Castlegar, BC

EMS Number	Field Designation	Aquifer	Ground Elevation (m AMSL)	TOC Elevation (m AMSL) ¹	Depth to Groundwater (m BTOR)	
					May-25	Oct-25
E232086	MW1-95	BR	490.353	490.961	38.69	40.10
E253791	MW06-05	OB	477.030	477.587	53.73	52.58
E335945	MW07-05	OB	486.272	487.204	60.90	59.41
E303871	MW14-01	OB	474.478	475.315	53.80	54.53
E303870	MW14-02	OB	472.886	473.649	51.88	NS
E309167	MW17-01	OB	474.429	475.408	DRY	DRY
E309168	MW17-02	OB	473.729	474.606	DRY	DRY
E309169	MW17-03	BR	471.470	472.620	48.23	48.77
E323191	MW20-1	OB	470.778	471.789	49.53	48.63

¹ Top of pipe elevations have not been surveyed, so depth to groundwater in m AMSL is not available.

Notes:

EMS	Environmental Monitoring System
TOC	top of cap
m AMSL	metres above mean sea level
m BTOR	meters below top of riser (top of pvc pipe)
BD	bedrock
OB	overburden

Regional District of Central Kootenay
Field Notes 2025
Ootischenia Landfill, Castlegar, BC

[illegible]

APPENDIX 4. ANALYTICAL RESULTS SUMMARY

			BC CSR		BC CSR																					
			AW		DW																					
EMS ID							E232086		E232086		E253791		E253791		E335945		E335945		E303871		E303871					
Client Sample ID							MW1-95		MW1-95		MW06-05		MW06-05		MW07-05		MW07-05		MW14-01		MW14-01					
Date Sampled							28-May-2025		20-Oct-2025		28-May-2025		21-Oct-2025		28-May-2025		21-Oct-2025		28-May-2025		21-Oct-2025					
Time Sampled							08:40		10:01		15:40		13:55		16:30		13:15		12:45		09:56					
ALS Sample ID							VA25B2767-001		VA25C8427-001		VA25B2767-002		VA25C8427-002		VA25B2767-003		VA25C8427-003		VA25B2767-004		VA25C8427-004					
							Sub-Matrix: Groundwater		Sub-Matrix: Groundwater		Sub-Matrix: Groundwater		Sub-Matrix: Groundwater		Sub-Matrix: Groundwater		Sub-Matrix: Groundwater		Sub-Matrix: Groundwater		Sub-Matrix: Groundwater					
Parameter			Lowest Detection Limit		Units																					
Physical Tests (Matrix: Water)																										
Conductivity			2.0		µS/cm				407		399		487		560		828		776		581		590			
Alkalinity, total (as CaCO3)			1.0		mg/L				159		157		171		222		381		341		256		262			
Hardness (as CaCO3), dissolved			0.50		mg/L				197		185		223		255		364		358		285		277			
Solids, total dissolved [TDS]			10		mg/L				274		262		315		372		518		496		394		412			
Solids, total suspended [TSS]			3.0		mg/L				10.1		40.2		4.3		6.2		5.9		7.6		13.7		74.4			
pH			0.10		pH units				7.84		7.94		7.72		7.84		7.34		7.52		7.95		7.92			
Anions and Nutrients (Matrix: Water)																										
Ammonia, total (as N)			0.0050		mg/L		pH dep.		<0.0050		0.008		<0.0050		0.0068		0.0164		0.165		0.0393		0.0111			
Bromide			0.050		mg/L				<0.050		<0.050		<0.050		<0.050		<0.250		<0.250		<0.050		<0.050			
Chloride			0.50		mg/L		1500		250		1.45		1.34		21.3		19.10		27.2		34.1		17.6		19.2	
Fluoride			0.020		mg/L		hardness dep.		1.5		0.467		0.47		0.147		0.109		<0.100		<0.100		0.063		0.085	
Kjeldahl nitrogen, total [TKN]			0.050		mg/L						0.131		0.061		0.127		0.117		0.379		0.638		0.415		0.137	
Nitrate (as N)			0.0050		mg/L		400		10		0.0953		0.0285		<0.0050		0.006		<0.0250		0.503		0.0241		<0.0050	
Nitrite (as N)			0.0010		mg/L		chloride dep.		1		<0.0010		<0.0010		<0.0010		0.0013		<0.0050		0.0451		<0.0010		<0.0010	
Sulfate (as SO4)			0.30		mg/L		hardness dep.		500		52.6		55.7		47.3		52.5		37.8		40.6		34.1		35.4	
Organic / Inorganic Carbon (Matrix: Water)																										
Carbon, total organic [TOC]			0.50		mg/L				1.51		7.33		1.46		1.97		4.16		6.29		2.79		23.5			
Dissolved Metals (Matrix: Water)																										
Aluminum (Al)-Dissolved			1.0		ug/L		9500		4.9		2.7		5.6		3.2		5.3		4.8		3.6		3.1			
Antimony (Sb)-Dissolved			0.10		ug/L		90		6		0.12		0.21		0.12		0.11		0.15		0.21		<0.10		0.12	
Arsenic (As)-Dissolved			0.10		ug/L		50		10		0.11		<0.10		0.2		0.19		0.24		0.25		1.82		1.34	
Barium (Ba)-Dissolved			0.10		ug/L		10000		1000		6.76		5.53		41.9		51.3		103		106		44.5		50.2	
Beryllium (Be)-Dissolved			0.100		ug/L		1.5		8		<0.100		<0.100		<0.100		<0.100		<0.100		<0.100		<0.100		<0.100	
Bismuth (Bi)-Dissolved			0.050		ug/L				<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
Boron (B)-Dissolved			10		ug/L		12000		5000		10		12		<10		11		86		77		18		15	
Cadmium (Cd)-Dissolved			0.0050		ug/L		hardness dep.		5		0.0257		0.0129		0.0327		0.0319		0.579		1.21		<0.0050		<0.0050	
Calcium (Ca)-Dissolved			50		ug/L				66400		61400		75200		85100		125000		115000		102000		97100			
Cesium (Cs)-Dissolved			0.010		ug/L				0.087		0.090		<0.010		<0.010		<0.010		<0.010		<0.010		<0.010		<0.010	
Chromium (Cr)-Dissolved			0.50		ug/L		10 ⁱ		50 ⁱ		<0.50		<0.50		<0.50		<0.50		<0.50		<0.50		<0.50		<0.50	
Cobalt (Co)-Dissolved			0.10		ug/L		40		1		<0.10		<0.10		<0.10		0.15		1.86		3.03		0.2		0.31	
Copper (Cu)-Dissolved			0.20		ug/L		hardness dep.		1500		2.3		0.98		4.6		4.95		5.87		10.6		0.64		1.29	
Iron (Fe)-Dissolved			10		ug/L				6500		<10		<10		<10		16		<10		28		294		229	
Lead (Pb)-Dissolved			0.050		ug/L		hardness dep.		10		0.092		<0.050		0.062		<0.050		<0.050		0.156		<0.050		<0.050	
Lithium (Li)-Dissolved			1.0		ug/L		8		5		5.1		4.4		5.3		8.7		8		8.5		8			
Magnesium (Mg)-Dissolved			5.0		ug/L				7600		7640		8470		10400		12700		17200		7400		8400			
Manganese (Mn)-Dissolved			0.10		ug/L		1500		1.94		0.78		4.66		9.58		949		1730		76.1		88.2			
Mercury (Hg)-Dissolved			0.0050		ug/L		0.25		1		<0.0050		<0.0050		<0.0050		<0.0050		<0.0050		<0.0050		<0.0050		<0.0050	
Molybdenum (Mo)-Dissolved			0.050		ug/L		10000		250		9.28		8.94		4.32		3.33		2.92		2.5		2.08		1.91	
Nickel (Ni)-Dissolved			0.50		ug/L		hardness dep.		80		<0.50		<0.50		<0.50		<0.50		5.93		6.95		1.09		0.84	
Phosphorus (P)-Dissolved			50		ug/L				<50		<50		<50		<50		<50		<50		<50		204		148	
Potassium (K)-Dissolved			50		ug/L				515		430		2400		2580		3660		3760		3970		3760			
Rubidium (Rb)-Dissolved			0.20		ug/L				0.88		0.89		<0.20		<0.20		0.33		0.5		1.94		1.53			
Selenium (Se)-Dissolved			0.050		ug/L		20		10		<0.050		<0.050		0.147		0.137		0.21		0.238		<0.050		<0.050	
Silicon (Si)-Dissolved			50		ug/L				11400		11300		8860		9550		10700		11100		21300		18600			
Silver (Ag)-Dissolved			0.010		ug/L		hardness dep.		20		<0.010		<0.010		<0.010		<0.010		<0.010		<0.010		<0.010		<0.010	
Sodium (Na)-Dissolved			50		ug/L		200000		7430		6580		8890		11500		45000		20300		10000		9350			
Strontium (Sr)-Dissolved			0.20		ug/L		2500		678		634		392		451		574		584		567		541			
Sulfur (S)-Dissolved			500		ug/L				17500		19400		16600		18100		14000		14700		12600		12400			
Tellurium (Te)-Dissolved			0.20		ug/L				<0.20		<0.20		<0.20		<0.20		<0.20		<0.20		<0.20		<0.20		<0.20	
Thallium (Tl)-Dissolved			0.010		ug/L		3		<0.010		<0.010		<0.010		<0.010		<0.010		0.016		<0.010		<0.010		<0.010	
Thorium (Th)-Dissolved			0.10		ug/L				<0.10		<0.10		<0.10		<0.10		<0.10		<0.10		<0.10		<0.10		<0.10	
Tin (Sn)-Dissolved			0.10		ug/L		2500		0.3		0.18		0.22		0.27		0.16		0.48		0.22		0.15			
Titanium (Ti)-Dissolved			0.30		ug/L		1000		0.33		0.67		<0.30		<0.30		<0.30		<0.30		<0.30		<0.30		<0.30	
Tungsten (W)-Dissolved			0.10		ug/L				3		1.78		1.82		<0.10		<0.10		<0.10		<0.10		0.22		0.17	
Uranium (U)-Dissolved			0.010		ug/L		85		20		4.37		3.95		4.7		5.41		12.4		13.8		1.39		1.32	
Vanadium (V)-Dissolved			0.50		ug/L				20		<0.50		<0.50		0.69		0.7		0.52		0.78		0.54		0.97	
Zinc (Zn)-Dissolved			1.0		ug/L		hardness dep.		3000		8.6		8.4		10.3		10.9		13		16.8		7.8		7.4	
Zirconium (Zr)-Dissolved			0.20		ug/L				<0.20		<0.20		<0.20		<0.20		<0.20		<0.20		<0.20		<0.20		<0.20	
Dissolved Mercury Filtration Location					-				Field		Field		Field		Field		Field		Field		Field		Field		Field	
Dissolved Metals Filtration Location					-				Field		Field		Field		Field		Field		Field		Field		Field		Field	

CSR standards for heavy metals, metalloids and inorganic ions applied to groundwater are designed for the dissolved substance concentrations with the exception of the drinking water standards, which are designed for unfiltered samples obtained at the point of consumption (total substance concentrations) (B.C. Reg. 375/96, current to January 20, 2026, Schedule 3.2). Since these groundwater samples are obtained from groundwater monitoring wells and not from a water supply well, the drinking water standards have been applied to the dissolved substance concentrations to be more representative of in-situ aquifer conditions.

1 Cr (VI) generic numerical water standard (B.C. Reg. 375/96, current to January 20, 2026, Schedule 3.2).

LEGEND:

Parameter higher than the BC CSR generic numerical water standard for aquatic life.

Parameter higher than the BC CSR generic numerical water standard for drinking water.

Parameter higher than both the BC CSR generic numerical water standards for aquatic life and drinking water.

			BC CSR		BC CSR					
			AW	DW						
EMS ID					E265110	E309169	E309169	E323191	E323191	
Client Sample ID					MW14-02	MW17-03	MW17-03	MW20-1	MW20-1	
Date Sampled					09-Jun-2025	28-May-2025	20-Oct-2025	28-May-2025	21-Oct-2025	
Time Sampled					11:10	11:15	11:46	14:30	17:15	
ALS Sample ID					VA25B3738-001	VA25B2767-005	VA25C8427-005	VA25B2767-006	VA25C8427-006	
					Sub-Matrix: Groundwater	Sub-Matrix: Groundwater	Sub-Matrix: Groundwater	Sub-Matrix: Groundwater	Sub-Matrix: Groundwater	
Parameter	Lowest Detection Limit	Units								
Physical Tests (Matrix: Water)										
Conductivity	2.0	µS/cm			684	402	401	479	490	
Alkalinity, total (as CaCO3)	1.0	mg/L			295	150	140	213	219	
Hardness (as CaCO3), dissolved	0.50	mg/L			296	192	185	242	231	
Solids, total dissolved [TDS]	10	mg/L			432	264	264	301	314	
Solids, total suspended [TSS]	3.0	mg/L			11.2	5.7	77	13.1	19.6	
pH	0.10	pH units			8.01	7.85	7.97	7.78	7.81	
Anions and Nutrients (Matrix: Water)										
Ammonia, total (as N)	0.0050	mg/L	pH dep.		0.0106	<0.0050	<0.0050	0.0212	<0.0050	
Bromide	0.050	mg/L			<0.250	<0.050	<0.050	<0.050	<0.050	
Chloride	0.50	mg/L	1500	250	28.1	1.51	2.49	11	12.8	
Fluoride	0.020	mg/L	hardness dep.	1.5	<0.100	0.279	0.372	0.122	0.107	
Kjeldahl nitrogen, total [TKN]	0.050	mg/L			0.517	0.12	0.091	0.53	0.157	
Nitrate (as N)	0.0050	mg/L	400	10	<0.0250	0.0551	<0.0050	0.145	0.0336	
Nitrite (as N)	0.0010	mg/L	chloride dep.	1	<0.0050	<0.0010	<0.0010	0.001	0.0026	
Sulfate (as SO4)	0.30	mg/L	hardness dep.	500	45.9	58.3	65.9	24.8	28.1	
Organic / Inorganic Carbon (Matrix: Water)										
Carbon, total organic [TOC]	0.50	mg/L			7.2	1.99	12.9	2.63	6.39	
Dissolved Metals (Matrix: Water)										
Aluminum (Al)-Dissolved	1.0	ug/L		9500	4.9	3.4	4.1	4.1	4	
Antimony (Sb)-Dissolved	0.10	ug/L	90	6	0.13	0.17	<0.10	0.14	0.12	
Arsenic (As)-Dissolved	0.10	ug/L	50	10	0.44	0.32	0.29	0.17	0.23	
Barium (Ba)-Dissolved	0.10	ug/L	10000	1000	72.3	21.4	20	88.3	95.8	
Beryllium (Be)-Dissolved	0.100	ug/L	1.5	8	<0.100	<0.100	<0.100	<0.100	<0.100	
Bismuth (Bi)-Dissolved	0.050	ug/L			<0.050	<0.050	<0.050	<0.050	<0.050	
Boron (B)-Dissolved	10	ug/L	12000	5000	949	<10	<10	20	49	
Cadmium (Cd)-Dissolved	0.0050	ug/L	hardness dep.	5	0.144	0.0125	0.0084	0.0709	0.101	
Calcium (Ca)-Dissolved	50	ug/L			93200	58100	55300	75500	71900	
Cesium (Cs)-Dissolved	0.010	ug/L			<0.010	<0.010	<0.010	<0.010	<0.010	
Chromium (Cr)-Dissolved	0.50	ug/L	10 ¹	50 ¹	<0.50	<0.50	<0.50	1.2	<0.50	
Cobalt (Co)-Dissolved	0.10	ug/L	40	1	6.18	<0.10	<0.10	0.44	0.49	
Copper (Cu)-Dissolved	0.20	ug/L	hardness dep.	1500	9.75	2.24	1.26	16.4	6.26	
Iron (Fe)-Dissolved	10	ug/L		6500	<10	<10	<10	<10	<10	
Lead (Pb)-Dissolved	0.050	ug/L	hardness dep.	10	<0.050	<0.050	<0.050	0.065	<0.050	
Lithium (Li)-Dissolved	1.0	ug/L		8	7	5.7	5.3	9.4	9.4	
Magnesium (Mg)-Dissolved	5.0	ug/L			15300	11500	11500	13000	12600	
Manganese (Mn)-Dissolved	0.10	ug/L		1500	40.5	0.95	0.28	5.36	32.8	
Mercury (Hg)-Dissolved	0.0050	ug/L	0.25	1	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	
Molybdenum (Mo)-Dissolved	0.050	ug/L	10000	250	4.58	6.95	8.88	1.72	1.85	
Nickel (Ni)-Dissolved	0.50	ug/L	hardness dep.	80	5.3	<0.50	<0.50	2.57	3.02	
Phosphorus (P)-Dissolved	50	ug/L			<50	<50	<50	<50	<50	
Potassium (K)-Dissolved	50	ug/L			3030	1650	1690	2760	2770	
Rubidium (Rb)-Dissolved	0.20	ug/L			<0.20	0.92	0.84	0.24	<0.20	
Selenium (Se)-Dissolved	0.050	ug/L	20	10	0.694	0.49	0.374	1.03	0.165	
Silicon (Si)-Dissolved	50	ug/L			9680	9540	8960	11200	11800	
Silver (Ag)-Dissolved	0.010	ug/L	hardness dep.	20	<0.010	<0.010	<0.010	<0.010	<0.010	
Sodium (Na)-Dissolved	50	ug/L		200000	40000	5610	6810	4960	7770	
Strontium (Sr)-Dissolved	0.20	ug/L		2500	586	316	346	480	470	
Sulfur (S)-Dissolved	500	ug/L			17600	21200	23200	8840	9880	
Tellurium (Te)-Dissolved	0.20	ug/L			<0.20	<0.20	<0.20	<0.20	<0.20	
Thallium (Tl)-Dissolved	0.010	ug/L	3		<0.010	<0.010	<0.010	<0.010	<0.010	
Thorium (Th)-Dissolved	0.10	ug/L			<0.10	<0.10	<0.10	<0.10	<0.10	
Tin (Sn)-Dissolved	0.10	ug/L		2500	0.37	0.22	0.13	0.47	0.53	
Titanium (Ti)-Dissolved	0.30	ug/L	1000		<0.30	<0.30	0.35	<0.30	<0.30	
Tungsten (W)-Dissolved	0.10	ug/L		3	<0.10	0.21	0.32	<0.10	<0.10	
Uranium (U)-Dissolved	0.010	ug/L	85	20	13.9	3.89	4.64	5.96	4.76	
Vanadium (V)-Dissolved	0.50	ug/L		20	0.63	0.78	0.78	1.28	1.17	
Zinc (Zn)-Dissolved	1.0	ug/L	hardness dep.	3000	11.6	4.9	10.2	9.7	6.1	
Zirconium (Zr)-Dissolved	0.20	ug/L			<0.20	<0.20	<0.20	<0.20	<0.20	
Dissolved Mercury Filtration Location	-				Field	Field	Field	Field	Field	
Dissolved Metals Filtration Location	-				Field	Field	Field	Field	Field	

CSR standards for heavy metals, metalloids and inorganic ions applied to groundwater are designed for the dissolved substance concentrations with the exception of the drinking water standards, which are designed for unfiltered samples obtained at the point of consumption (total substance concentrations) (B.C. Reg. 375/96, current to January 20, 2026, Schedule 3.2). Since these groundwater samples are obtained from groundwater monitoring wells and not from a water supply well, the drinking water standards have been applied to the dissolved substance concentrations to be more representative of in-situ aquifer conditions.

¹ Cr (VI) generic numerical water standard (B.C. Reg. 375/96, current to January 20, 2026, Schedule 3.2).

LEGEND:

Parameter higher than the BC CSR generic numerical water standard for aquatic life.

Parameter higher than the BC CSR generic numerical water standard for drinking water.

Parameter higher than both the BC CSR generic numerical water standards for aquatic life and drinking water.

			BC CSR		BC CSR
			AW	DW	
Client Sample ID					E335945
Client Sample ID					MW07-05
Date Sampled					21-Oct-2025
Time Sampled					13:15
ALS Sample ID					VA25C8427-003
					Sub-Matrix: Groundwater
Parameter	Lowest Detection Limit	Units			
Volatile Organic Compounds (Matrix: Water)					
Chlorobenzene	0.50	µg/L	13	80	<0.50
Chloromethane	5.0	µg/L			<5.0
Dichlorobenzene, 1,2-	0.50	µg/L	7	200	<0.50
Dichlorobenzene, 1,3-	0.50	µg/L	1500		<0.50
Dichlorobenzene, 1,4-	0.50	µg/L	260	5	<0.50
Dichloropropane, 1,2-	0.50	µg/L		4.5	<0.50
Dichloropropylene, cis+trans-1,3-	0.75	µg/L		1.5	<0.75
Dichloropropylene, cis-1,3-	0.50	µg/L			<0.50
Tetrachloroethane, 1,1,1,2-	0.50	µg/L		6	<0.50
Tetrachloroethane, 1,1,2,2-	0.20	µg/L		0.8	<0.20
Trichloroethane, 1,1,2-	0.50	µg/L		3	<0.50
Trichlorofluoromethane	0.50	µg/L		1000	<0.50
Volatile Organic Compounds [Drycleaning] (Matrix: Water)					
Carbon tetrachloride	0.50	µg/L	130	2	<0.50
Chloroethane	0.50	µg/L			<0.50
Dichloroethane, 1,1-	0.50	µg/L		30	<0.50
Dichloroethane, 1,2-	0.50	µg/L	1000	5	<0.50
Dichloroethylene, 1,1-	0.50	µg/L		14	<0.50
Dichloroethylene, cis-1,2-	0.50	µg/L		8	1.62
Dichloroethylene, trans-1,2-	0.50	µg/L		80	<0.50
Dichloromethane	1.0	µg/L	980	50	<1.0
Dichloropropylene, trans-1,3-	0.50	µg/L			<0.50
Tetrachloroethylene	0.50	µg/L	1100	30	<0.50
Trichloroethane, 1,1,1-	0.50	µg/L		8000	<0.50
Trichloroethylene	0.50	µg/L	200	5	<0.50
Vinyl chloride	0.40	µg/L		2	0.58
Volatile Organic Compounds [Fuels] (Matrix: Water)					
Benzene	0.50	µg/L	400	5	<0.50
Ethylbenzene	0.50	µg/L	2000	140	<0.50
Methyl-tert-butyl ether [MTBE]	0.50	µg/L	34000	95	<0.50
Styrene	0.50	µg/L	720	800	<0.50
Toluene	0.40	µg/L	5	60	<0.40
Xylene, m+p-	0.40	µg/L			<0.40
Xylene, o-	0.30	µg/L			<0.30
Xylenes, total	0.50	µg/L	300	90	<0.50
Volatile Organic Compounds [THMs] (Matrix: Water)					
Bromodichloromethane	0.50	µg/L		100	<0.50
Bromoform	0.50	µg/L		100	<0.50
Chloroform	0.50	µg/L	20	100	<0.50
Dibromochloromethane	0.50	µg/L		100	<0.50
Volatile Organic Compounds Surrogates (Matrix: Water)					
Bromofluorobenzene, 4-	1.0	%			84.7
Difluorobenzene, 1,4-	1.0	%			97.6
Polycyclic Aromatic Hydrocarbons (Matrix: Water)					
Acenaphthene	0.010	µg/L	60	250	<0.010
Acenaphthylene	0.010	µg/L			<0.010
Acridine	0.010	µg/L	0.5		<0.010
Anthracene	0.010	µg/L	1	1000	<0.010
Benz(a)anthracene	0.010	µg/L	1	0.07	<0.010
Benzo(a)pyrene	0.0050	µg/L	0.1	0.01	<0.0050
Benzo(b+j)fluoranthene	0.010	µg/L		0.07	<0.010
Benzo(b+j+k)fluoranthene	0.015	µg/L			<0.015
Benzo(g,h,i)perylene	0.010	µg/L			<0.010
Benzo(k)fluoranthene	0.010	µg/L			<0.010
Chrysene	0.010	µg/L	1	7	<0.010
Dibenz(a,h)anthracene	0.0050	µg/L		0.01	<0.0050
Fluoranthene	0.010	µg/L	2	150	<0.010
Fluorene	0.010	µg/L	120	150	<0.010
Indeno(1,2,3-c,d)pyrene	0.010	µg/L			<0.010
Methylnaphthalene, 1+2-	0.015	µg/L			<0.015
Methylnaphthalene, 1-	0.010	µg/L		5.5	<0.010
Methylnaphthalene, 2-	0.010	µg/L		15	<0.010
Naphthalene	0.050	µg/L	10	80	<0.050
Phenanthrene	0.020	µg/L	3		<0.020
Pyrene	0.010	µg/L	0.2	100	<0.010
Quinoline	0.050	µg/L	34	0.05	<0.050
B(a)P total potency equivalents [B(a)P TPE]	0.010	µg/L			<0.010
PAHs, high molecular weight (BC AWQ)	0.030	µg/L			<0.030
PAHs, low molecular weight (BC AWQ)	0.060	µg/L			<0.060
PAHs, total (CCME sewer 18)	0.070	µg/L			<0.070
PAHs, total (EPA 16)	0.065	µg/L			<0.065
Polycyclic Aromatic Hydrocarbons Surrogates (Matrix: Water)					
Chrysene-d12	0.1	%			93.9
Naphthalene-d8	0.1	%			90.8
Phenanthrene-d10	0.1	%			99.7

LEGEND:

Parameter greater than the detection limit.

Parameter higher than the BC CSR generic numerical water standard for aquatic life.

Parameter higher than the BC CSR generic numerical water standard for drinking water.

Parameter higher than both the BC CSR generic numerical water standards for aquatic life and drinking water.

			First Half			Second Half		
Client Sample ID			MW17-03 (E309169)	Duplicate	% RPD	MW06-05 (E253791)	Duplicate	% RPD
Date Sampled			28-May-2025	28-May-2025		21-Oct-2025	21-Oct-2025	
Time Sampled			11:15	11:15		13:55	13:55	
ALS Sample ID			VA25B2767-005	VA25B2767-007		VA25C8427-002	VA25C8427-007	
Parameter	Lowest Detection Limit	Units						
Physical Tests (Matrix: Water)								
Conductivity	2	µS/cm	402	405	0.7	560	561	0.2
Alkalinity, total (as CaCO3)	1	mg/L	150	148	1.3	222	222	0.0
Hardness (as CaCO3), dissolved	0.6	mg/L	192	200	4.1	255	261	2.3
Solids, total dissolved [TDS]	10	mg/L	264	261	1.1	372	360	3.3
Solids, total suspended [TSS]	3	mg/L	5.7	6.1	6.8	6.2	6.2	0.0
pH	0.1	pH units	7.85	7.88	0.4	7.84	7.87	0.4
Anions and Nutrients (Matrix: Water)								
Ammonia, total (as N)	0.005	mg/L	<0.0050	<0.0050		0.0068	0.0059	14.2
Bromide	0.05	mg/L	<0.050	<0.050		<0.050	<0.050	
Chloride	0.5	mg/L	1.51	1.5	0.7	19.1	19.1	0.0
Fluoride	0.02	mg/L	0.279	0.273	2.2	0.109	0.104	4.7
Kjeldahl nitrogen, total [TKN]	0.05	mg/L	0.120	0.103	15.2	0.117	0.086	30.5
Nitrate (as N)	0.005	mg/L	0.0551	0.0531	3.7	0.0060	0.0084	33.3
Nitrite (as N)	0.001	mg/L	<0.0010	<0.0010		0.0013	0.0013	0.0
Sulfate (as SO4)	0.3	mg/L	58.3	58.0	0.5	52.5	52.3	0.4
Organic / Inorganic Carbon (Matrix: Water)								
Carbon, total inorganic [TIC]	0.5	mg/L	36.2	35.8	1.1			
Carbon, total organic [TOC]	0.5	mg/L	1.99	2.14	7.3	1.97	1.11	55.8
Dissolved Metals (Matrix: Water)								
Aluminum, dissolved	1	µg/L	3.4	5.0	38.1	3.2	1.7	61.2
Antimony, dissolved	0.1	µg/L	0.17	0.17	0.0	0.11	<0.10	
Arsenic, dissolved	0.1	µg/L	0.32	0.31	3.2	0.19	0.20	5.1
Barium, dissolved	0.1	µg/L	21.4	20.7	3.3	51.3	52.1	1.5
Beryllium, dissolved	0.1	µg/L	<0.100	<0.100		<0.100	<0.100	
Bismuth, dissolved	0.05	µg/L	<0.050	<0.050		<0.050	<0.050	
Boron, dissolved	10	µg/L	<10	<10		11	<10	
Cadmium, dissolved	0.005	µg/L	0.0125	0.0148	16.8	0.0319	0.0313	1.9
Calcium, dissolved	50	µg/L	58100	60700	4.4	85100	87100	2.3
Cesium, dissolved	0.01	µg/L	<0.010	<0.010		<0.010	<0.010	
Chromium, dissolved	0.5	µg/L	<0.50	<0.50		<0.50	<0.50	
Cobalt, dissolved	0.1	µg/L	<0.10	<0.10		0.15	0.10	40.0
Copper, dissolved	0.2	µg/L	2.24	2.33	3.9	4.95	2.40	69.4
Iron, dissolved	10	µg/L	<10	<10		16	11	37.0
Lead, dissolved	0.05	µg/L	<0.050	<0.050		<0.050	<0.050	
Lithium, dissolved	1	µg/L	5.7	5.8	1.7	5.3	5.1	3.8
Magnesium, dissolved	5	µg/L	11500	11700	1.7	10400	10500	1.0
Manganese, dissolved	0.1	µg/L	0.95	1.08	12.8	9.58	6.25	42.1
Mercury, dissolved	0.005	µg/L	<0.0050	<0.0050		<0.0050	<0.0050	
Molybdenum, dissolved	0.05	µg/L	6.95	6.89	0.9	3.33	3.28	1.5
Nickel, dissolved	0.5	µg/L	<0.50	<0.50		<0.50	<0.50	
Phosphorus, dissolved	50	µg/L	<50	<50		<50	<50	
Potassium, dissolved	50	µg/L	1650	1680	1.8	2580	2540	1.6
Rubidium, dissolved	0.2	µg/L	0.92	0.97	5.3	<0.20	<0.20	
Selenium, dissolved	0.05	µg/L	0.490	0.591	18.7	0.137	0.193	33.9
Silicon, dissolved	50	µg/L	9540	9460	0.8	9550	9600	0.5
Silver, dissolved	0.01	µg/L	<0.010	<0.010		<0.010	<0.010	
Sodium, dissolved	50	µg/L	5610	5580	0.5	11500	11100	3.5
Strontium, dissolved	0.2	µg/L	316	313	1.0	451	478	5.8
Sulfur, dissolved	500	µg/L	21200	20700	2.4	18100	17900	1.1
Tellurium, dissolved	0.2	µg/L	<0.20	<0.20		<0.20	<0.20	
Thallium, dissolved	0.01	µg/L	<0.010	<0.010		<0.010	<0.010	
Thorium, dissolved	0.1	µg/L	<0.10	<0.10		<0.10	<0.10	
Tin, dissolved	0.1	µg/L	0.22	0.23	4.4	0.27	0.14	63.4
Titanium, dissolved	0.3	µg/L	<0.30	<0.30		<0.30	<0.30	
Tungsten, dissolved	0.1	µg/L	0.21	0.21	0.0	<0.10	<0.10	
Uranium, dissolved	0.01	µg/L	3.89	3.93	1.0	5.41	5.56	2.7
Vanadium, dissolved	0.5	µg/L	0.78	0.79	1.3	0.70	0.79	12.1
Zinc, dissolved	1	µg/L	4.9	4.9	0.0	10.9	7.8	33.2
Zirconium, dissolved	0.2	µg/L	<0.20	<0.20		<0.20	<0.20	
Dissolved mercury filtration location			Field	Field		Field	Field	
Dissolved metals filtration location			Field	Field		Field	Field	

Total Parameters	111	RPD Parameters	36	Al (diss.)	RPD Parameters	36	TKN, nitrate, TOC and several dissolved m
Total RPD Parameters	72	RPD >20 %	1		RPD >20 %	11	
Total RPD >20 %	12	RPD >25 %	1		RPD >25 %	11	
Total RPD >25 %	12						

¹ Acceptable, result(s) within 5x the detection limit.

² Acceptable, these high % RPD duplicate results do not affect interpretation of the results since all of the results are well below the applicable CSR standards:

- Both H2 results are greater than one order of magnitude lower than the hardness-dependent CSR AW standard for copper (90 µg/L) and greater than two orders of magnitude lower than the CSR DW standard for copper (1500 µg/L).
- Both H2 results are greater than two orders of magnitude lower than the CSR DW standard for manganese (1500 µg/L).
- Both H2 results are greater than two orders of magnitude lower than the hardness-dependent CSR AW standard for zinc (1650 µg/L) and the CSR DW standard for zinc (3000 µg/L).

Regional District of Central Kootenay
Quality Assurance - Quality Control Summary - Blanks 2025
Ootischenia Landfill, Castlegar, BC

			Second Half
Client Sample ID			Field Blank
Date Sampled			21-Oct-2025
Time Sampled			15:55
ALS Sample ID			VA25C8427-008
Parameter	Lowest Detection Limit	Units	
Physical Tests (Matrix: Water)			
Conductivity	2	µS/cm	2.0
Alkalinity, total (as CaCO3)	1	mg/L	<1.0
Hardness (as CaCO3), dissolved	0.6	mg/L	0.66
Solids, total dissolved [TDS]	10	mg/L	<10
Solids, total suspended [TSS]	3	mg/L	<3.0
pH	0.1	pH units	5.86
Anions and Nutrients (Matrix: Water)			
Ammonia, total (as N)	0.005	mg/L	0.0165
Bromide	0.05	mg/L	<0.050
Chloride	0.5	mg/L	<0.50
Fluoride	0.02	mg/L	<0.020
Kjeldahl nitrogen, total [TKN]	0.05	mg/L	<0.050
Nitrate (as N)	0.005	mg/L	<0.0050
Nitrite (as N)	0.001	mg/L	<0.0010
Sulfate (as SO4)	0.3	mg/L	<0.30
Organic / Inorganic Carbon (Matrix: Water)			
Carbon, total organic [TOC]	0.5	mg/L	<0.50
Dissolved Metals (Matrix: Water)			
Aluminum, dissolved	1	µg/L	<1.0
Antimony, dissolved	0.1	µg/L	<0.10
Arsenic, dissolved	0.1	µg/L	<0.10
Barium, dissolved	0.1	µg/L	0.31
Beryllium, dissolved	0.1	µg/L	<0.100
Bismuth, dissolved	0.05	µg/L	<0.050
Boron, dissolved	10	µg/L	<10
Cadmium, dissolved	0.005	µg/L	<0.0050
Calcium, dissolved	50	µg/L	208
Cesium, dissolved	0.01	µg/L	<0.010
Chromium, dissolved	0.5	µg/L	<0.50
Cobalt, dissolved	0.1	µg/L	<0.10
Copper, dissolved	0.2	µg/L	0.24
Iron, dissolved	10	µg/L	<10
Lead, dissolved	0.05	µg/L	<0.050
Lithium, dissolved	1	µg/L	<1.0
Magnesium, dissolved	5	µg/L	35.1
Manganese, dissolved	0.1	µg/L	0.32
Mercury, dissolved	0.005	µg/L	<0.0050
Molybdenum, dissolved	0.05	µg/L	<0.050
Nickel, dissolved	0.5	µg/L	<0.50
Phosphorus, dissolved	50	µg/L	<50
Potassium, dissolved	50	µg/L	<50
Rubidium, dissolved	0.2	µg/L	<0.20
Selenium, dissolved	0.05	µg/L	<0.050
Silicon, dissolved	50	µg/L	82
Silver, dissolved	0.01	µg/L	<0.010
Sodium, dissolved	50	µg/L	151
Strontium, dissolved	0.2	µg/L	1.41
Sulfur, dissolved	500	µg/L	<500
Tellurium, dissolved	0.2	µg/L	<0.20
Thallium, dissolved	0.01	µg/L	<0.010
Thorium, dissolved	0.1	µg/L	<0.10
Tin, dissolved	0.1	µg/L	<0.10
Titanium, dissolved	0.3	µg/L	<0.30
Tungsten, dissolved	0.1	µg/L	<0.10
Uranium, dissolved	0.01	µg/L	<0.010
Vanadium, dissolved	0.5	µg/L	<0.50
Zinc, dissolved	1	µg/L	<1.0
Zirconium, dissolved	0.2	µg/L	<0.20
Dissolved mercury filtration location			Field
Dissolved metals filtration location			Field

Total Parameters	54	
Number >DL	11	20%
Number <5 x DL	9	17%
Remainder	2	4%

¹ Acceptable, the result is within 5x the detection limit.

² The groundwater Field Blank results for dissolved magnesium and dissolved strontium were both ~7x the detection limit. These slightly high blank results do not affect the overall interpretation of the results as all of the groundwater samples quantified magnesium and strontium over two orders of magnitude higher than the Field Blank amounts. Additionally, the CSR DW standard for strontium (2500 µg/L) is greater than three orders of magnitude higher than strontium in the field blank and there are no water quality guidelines for magnesium.

APPENDIX 5. TREND GRAPHS

Figure A5-1

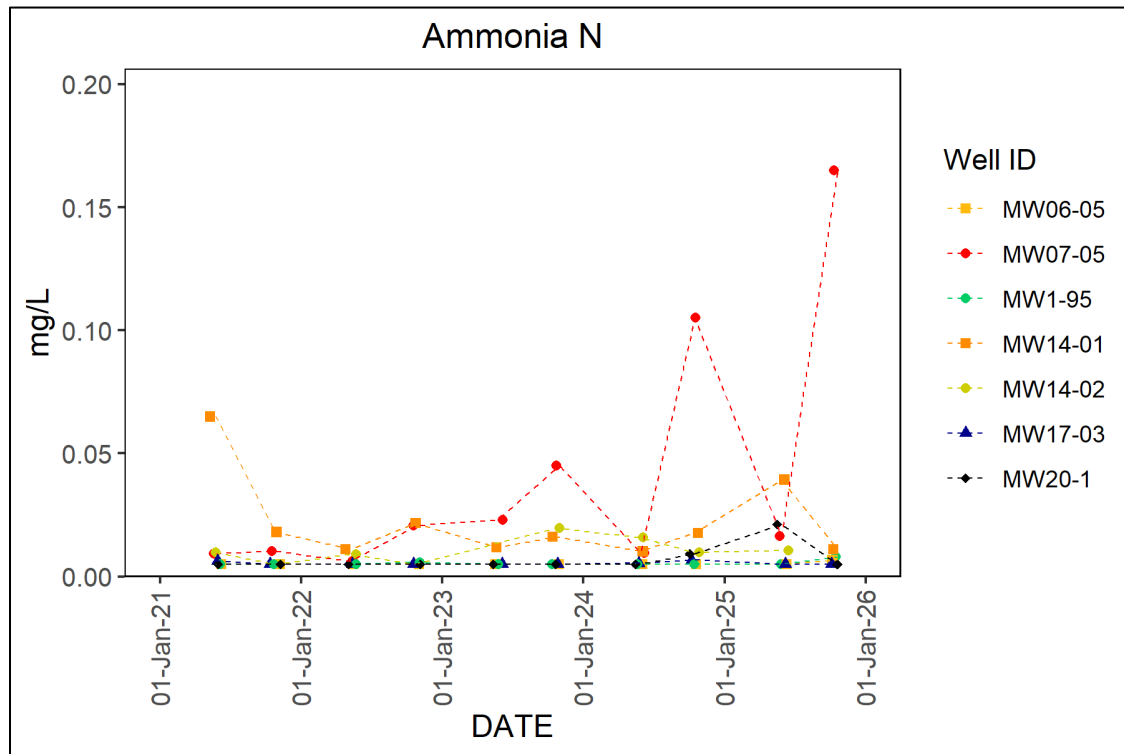


Figure A5-2

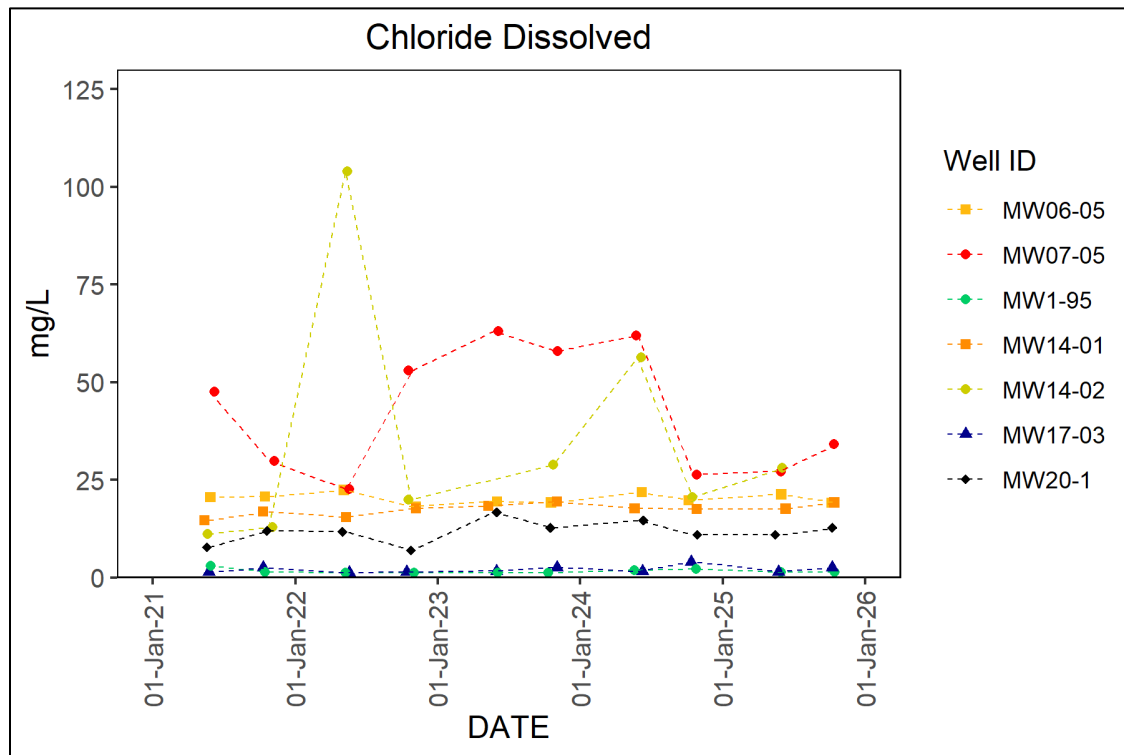


Figure A5-3

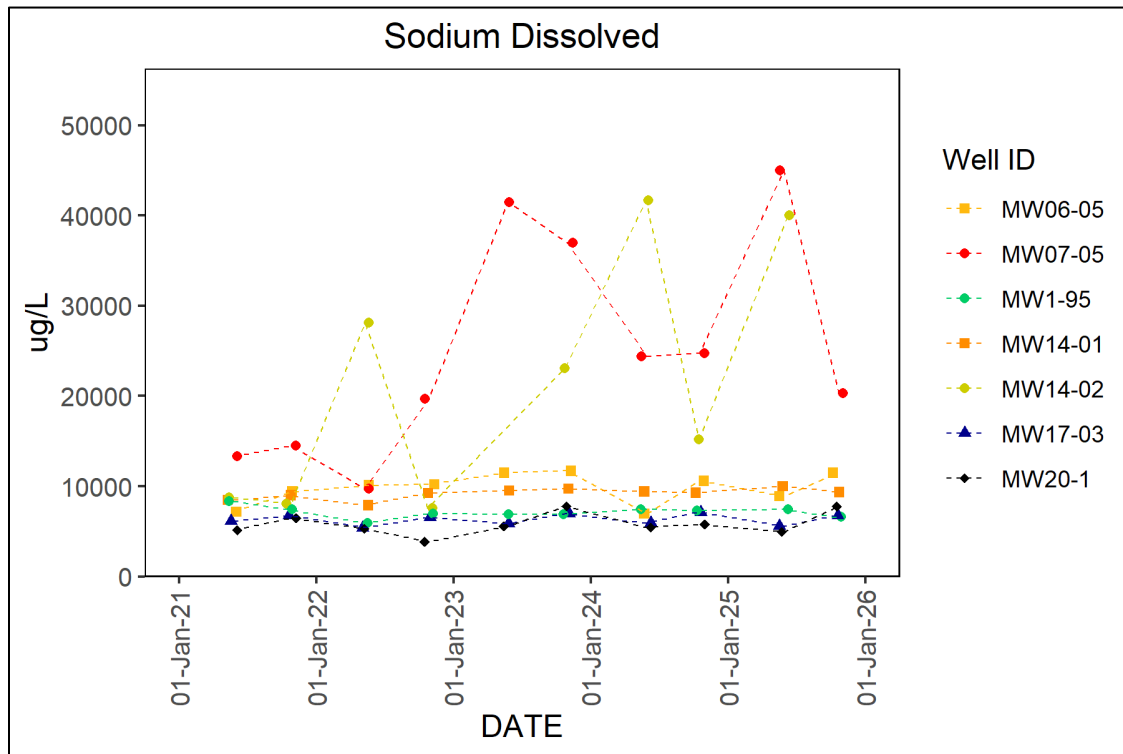


Figure A5-4

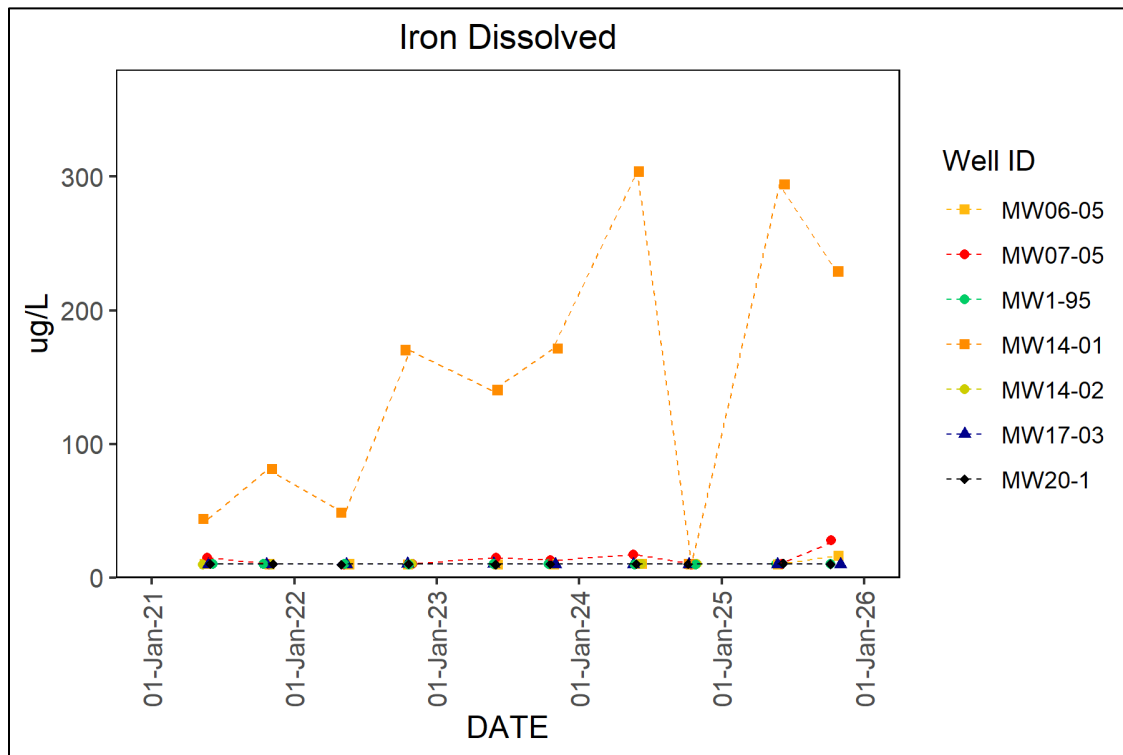
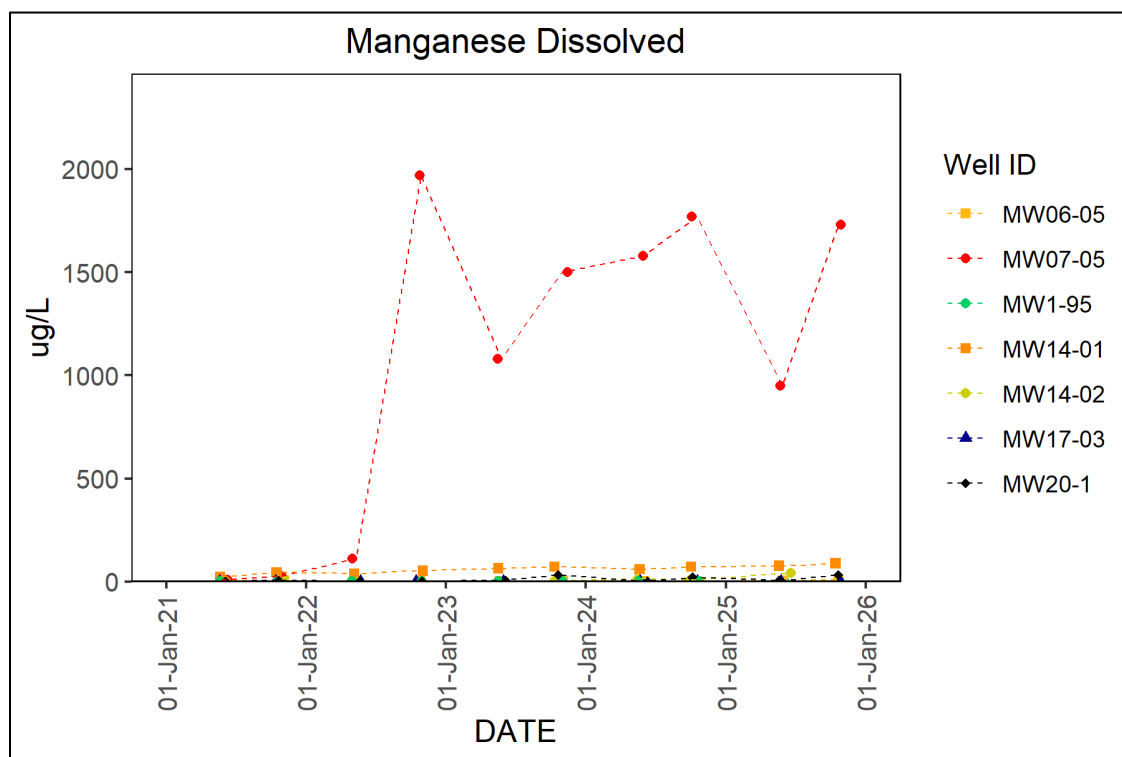


Figure A5-5



APPENDIX 6. LABORATORY CERTIFICATES OF ANALYSIS

CERTIFICATE OF ANALYSIS

Work Order	: VA25B2767	Laboratory	: ALS Environmental - Vancouver
Client	: Masse Environmental Consultants Ltd.	Account Manager	: Can Dang
Contact	: Ico de Zwart	Address	: 8081 Lougheed Highway
Address	: 812 Vernon Street		: Burnaby BC Canada V5A 1W9
	: Nelson British Columbia Canada V1L 4G4	E-mail	: Can.Dang@ALSGlobal.com
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 2016-503-RDKS Ootischenia	Date Samples Received	: 30-May-2025 12:00
PO	: ----	Date Analysis Commenced	: 31-May-2025
C-O-C number	: 22-20250529	Issue Date	: 06-Jun-2025 13:59
Sampler	: Chris Stephanou		
Site	: RDCK		
Quote number	: ----		
No. of samples received	: 7		
No. of samples analysed	: 7		

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

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>
Dan Gebert	Supervisor - Metals Mercury & Speciation	Metals, Burnaby, British Columbia
Erika Vanegas	Lab Assistant	Metals, Burnaby, British Columbia
Lindsay Gung	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Monica Ko	Supervisor - Inorganic	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Rebecca Sit	Supervisor - Organics Extractions	Inorganics, Burnaby, British Columbia
Robert Nguyen	Analyst	Metals, Burnaby, British Columbia
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 units
mg/L	milligrams per litre
pH units	pH units
µg/L	micrograms per litre
µS/cm	microsiemens per centimetre

<: 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
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.



Analytical Results

Sub-Matrix: Groundwater

(Matrix: Water)

Sub-Matrix: Groundwater (Matrix: Water)					Client sample ID	MW1-95 (E232086)	MW06-05 (E253791)	MW07-05 (E335945)	MW14-01 (E303871)	MW17-03 (E309169)
Client sampling date / time					28-May-2025 08:40	28-May-2025 15:40	28-May-2025 16:30	28-May-2025 12:45	28-May-2025 11:15	
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25B2767-001	VA25B2767-002	VA25B2767-003	VA25B2767-004	VA25B2767-005	
					Result	Result	Result	Result	Result	
Physical Tests										
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L	159	171	381	256	150	
Conductivity	----	E100/VA	2.0	µS/cm	407	487	828	581	402	
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L	197	223	364	285	192	
pH	----	E108/VA	0.10	pH units	7.84	7.72	7.34	7.95	7.85	
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L	274	315	518	394	264	
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L	10.1	4.3	5.9	13.7	5.7	
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L	<0.0050	<0.0050	0.0164	0.0393	<0.0050	
Bromide	24959-67-9	E235.Br-L/VA	0.050	mg/L	<0.050	<0.050	<0.250 ^{DLDS}	<0.050	<0.050	
Chloride	16887-00-6	E235.Cl/VA	0.50	mg/L	1.45	21.3	27.2	17.6	1.51	
Fluoride	16984-48-8	E235.F/VA	0.020	mg/L	0.467	0.147	<0.100 ^{DLDS}	0.063	0.279	
Kjeldahl nitrogen, total [TKN]	----	E318/VA	0.050	mg/L	0.131	0.127	0.379	0.415	0.120	
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	0.0050	mg/L	0.0953	<0.0050	<0.0250 ^{DLDS}	0.0241	0.0551	
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	0.0010	mg/L	<0.0010	<0.0010	<0.0050 ^{DLDS}	<0.0010	<0.0010	
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	0.30	mg/L	52.6	47.3	37.8	34.1	58.3	
Organic / Inorganic Carbon										
Carbon, total inorganic [TIC]	----	E354-L/VA	0.50	mg/L	37.4	41.0	90.4	60.9	36.2	
Carbon, total organic [TOC]	----	E355-L/VA	0.50	mg/L	1.51	1.46	4.16	2.79	1.99	
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	1.0	µg/L	4.9	5.6	5.3	3.6	3.4	
Antimony, dissolved	7440-36-0	E421/VA	0.10	µg/L	0.12	0.12	0.15	<0.10	0.17	



Analytical Results

Sub-Matrix: Groundwater

(Matrix: Water)

					Client sample ID	MW1-95 (E232086)	MW06-05 (E253791)	MW07-05 (E335945)	MW14-01 (E303871)	MW17-03 (E309169)
					Client sampling date / time	28-May-2025 08:40	28-May-2025 15:40	28-May-2025 16:30	28-May-2025 12:45	28-May-2025 11:15
Analyte	CAS Number	Method/Lab	LOR	Unit		VA25B2767-001	VA25B2767-002	VA25B2767-003	VA25B2767-004	VA25B2767-005
						Result	Result	Result	Result	Result
Dissolved Metals										
Arsenic, dissolved	7440-38-2	E421/VA	0.10	µg/L		0.11	0.20	0.24	1.82	0.32
Barium, dissolved	7440-39-3	E421/VA	0.10	µg/L		6.76	41.9	103	44.5	21.4
Beryllium, dissolved	7440-41-7	E421/VA	0.100	µg/L		<0.100	<0.100	<0.100	<0.100	<0.100
Bismuth, dissolved	7440-69-9	E421/VA	0.050	µg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Boron, dissolved	7440-42-8	E421/VA	10	µg/L		10	<10	86	18	<10
Cadmium, dissolved	7440-43-9	E421/VA	0.0050	µg/L		0.0257	0.0327	0.579	<0.0050	0.0125
Calcium, dissolved	7440-70-2	E421/VA	50	µg/L		66400	75200	125000	102000	58100
Cesium, dissolved	7440-46-2	E421/VA	0.010	µg/L		0.087	<0.010	<0.010	<0.010	<0.010
Chromium, dissolved	7440-47-3	E421/VA	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Cobalt, dissolved	7440-48-4	E421/VA	0.10	µg/L		<0.10	<0.10	1.86	0.20	<0.10
Copper, dissolved	7440-50-8	E421/VA	0.20	µg/L		2.30	4.60	5.87	0.64	2.24
Iron, dissolved	7439-89-6	E421/VA	10	µg/L		<10	<10	<10	294	<10
Lead, dissolved	7439-92-1	E421/VA	0.050	µg/L		0.092	0.062	<0.050	<0.050	<0.050
Lithium, dissolved	7439-93-2	E421/VA	1.0	µg/L		5.0	4.4	8.7	8.5	5.7
Magnesium, dissolved	7439-95-4	E421/VA	5.0	µg/L		7600	8470	12700	7400	11500
Manganese, dissolved	7439-96-5	E421/VA	0.10	µg/L		1.94	4.66	949	76.1	0.95
Mercury, dissolved	7439-97-6	E509/VA	0.0050	µg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Molybdenum, dissolved	7439-98-7	E421/VA	0.050	µg/L		9.28	4.32	2.92	2.08	6.95
Nickel, dissolved	7440-02-0	E421/VA	0.50	µg/L		<0.50	<0.50	5.93	1.09	<0.50
Phosphorus, dissolved	7723-14-0	E421/VA	50	µg/L		<50	<50	<50	204	<50
Potassium, dissolved	7440-09-7	E421/VA	50	µg/L		515	2400	3660	3970	1650



Analytical Results

Sub-Matrix: Groundwater

(Matrix: Water)

Sub-Matrix: Groundwater (Matrix: Water)					Client sample ID	MW1-95 (E232086)	MW06-05 (E253791)	MW07-05 (E335945)	MW14-01 (E303871)	MW17-03 (E309169)
Client sampling date / time					28-May-2025 08:40	28-May-2025 15:40	28-May-2025 16:30	28-May-2025 12:45	28-May-2025 11:15	
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25B2767-001	VA25B2767-002	VA25B2767-003	VA25B2767-004	VA25B2767-005	
					Result	Result	Result	Result	Result	
Dissolved Metals										
Rubidium, dissolved	7440-17-7	E421/VA	0.20	µg/L	0.88	<0.20	0.33	1.94	0.92	
Selenium, dissolved	7782-49-2	E421/VA	0.050	µg/L	<0.050	0.147	0.210	<0.050	0.490	
Silicon, dissolved	7440-21-3	E421/VA	50	µg/L	11400	8860	10700	21300	9540	
Silver, dissolved	7440-22-4	E421/VA	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
Sodium, dissolved	7440-23-5	E421/VA	50	µg/L	7430	8890	45000	10000	5610	
Strontium, dissolved	7440-24-6	E421/VA	0.20	µg/L	678	392	574	567	316	
Sulfur, dissolved	7704-34-9	E421/VA	500	µg/L	17500	16600	14000	12600	21200	
Tellurium, dissolved	13494-80-9	E421/VA	0.20	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	
Thallium, dissolved	7440-28-0	E421/VA	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
Thorium, dissolved	7440-29-1	E421/VA	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10	
Tin, dissolved	7440-31-5	E421/VA	0.10	µg/L	0.30	0.22	0.16	0.22	0.22	
Titanium, dissolved	7440-32-6	E421/VA	0.30	µg/L	0.33	<0.30	<0.30	<0.30	<0.30	
Tungsten, dissolved	7440-33-7	E421/VA	0.10	µg/L	1.78	<0.10	<0.10	0.22	0.21	
Uranium, dissolved	7440-61-1	E421/VA	0.010	µg/L	4.37	4.70	12.4	1.39	3.89	
Vanadium, dissolved	7440-62-2	E421/VA	0.50	µg/L	<0.50	0.69	0.52	0.54	0.78	
Zinc, dissolved	7440-66-6	E421/VA	1.0	µg/L	8.6	10.3	13.0	7.8	4.9	
Zirconium, dissolved	7440-67-7	E421/VA	0.20	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	
Dissolved mercury filtration location	----	EP509/VA	-	-	Field	Field	Field	Field	Field	
Dissolved metals filtration location	----	EP421/VA	-	-	Field	Field	Field	Field	Field	

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



Analytical Results

Sub-Matrix: Groundwater

(Matrix: Water)

					Client sample ID	MW20-1 (E323191)	Duplicate	----	----	----
					Client sampling date / time	28-May-2025 14:30	28-May-2025 11:15	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25B2767-006	VA25B2767-007	----	----	----	----
					Result	Result	----	----	----	----
Physical Tests										
Alkalinity, total (as CaCO ₃)	----	E290/VA	1.0	mg/L	213	148	----	----	----	----
Conductivity	----	E100/VA	2.0	µS/cm	479	405	----	----	----	----
Hardness (as CaCO ₃), dissolved	----	EC100/VA	0.60	mg/L	242	200	----	----	----	----
pH	----	E108/VA	0.10	pH units	7.78	7.88	----	----	----	----
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L	301	261	----	----	----	----
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L	13.1	6.1	----	----	----	----
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L	0.0212	<0.0050	----	----	----	----
Bromide	24959-67-9	E235.Br-L/VA	0.050	mg/L	<0.050	<0.050	----	----	----	----
Chloride	16887-00-6	E235.Cl/VA	0.50	mg/L	11.0	1.50	----	----	----	----
Fluoride	16984-48-8	E235.F/VA	0.020	mg/L	0.122	0.273	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318/VA	0.050	mg/L	0.530	0.103	----	----	----	----
Nitrate (as N)	14797-55-8	E235.NO ₃ -L/VA	0.0050	mg/L	0.145	0.0531	----	----	----	----
Nitrite (as N)	14797-65-0	E235.NO ₂ -L/VA	0.0010	mg/L	0.0010	<0.0010	----	----	----	----
Sulfate (as SO ₄)	14808-79-8	E235.SO ₄ /VA	0.30	mg/L	24.8	58.0	----	----	----	----
Organic / Inorganic Carbon										
Carbon, total inorganic [TIC]	----	E354-L/VA	0.50	mg/L	50.9	35.8	----	----	----	----
Carbon, total organic [TOC]	----	E355-L/VA	0.50	mg/L	2.63	2.14	----	----	----	----
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	1.0	µg/L	4.1	5.0	----	----	----	----
Antimony, dissolved	7440-36-0	E421/VA	0.10	µg/L	0.14	0.17	----	----	----	----



Analytical Results

Sub-Matrix: Groundwater

(Matrix: Water)

					Client sample ID	MW20-1 (E323191)	Duplicate	----	----	----
					Client sampling date / time	28-May-2025 14:30	28-May-2025 11:15	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25B2767-006	VA25B2767-007	----	----	----	----
					Result	Result	----	----	----	----
Dissolved Metals										
Arsenic, dissolved	7440-38-2	E421/VA	0.10	µg/L	0.17	0.31	----	----	----	----
Barium, dissolved	7440-39-3	E421/VA	0.10	µg/L	88.3	20.7	----	----	----	----
Beryllium, dissolved	7440-41-7	E421/VA	0.100	µg/L	<0.100	<0.100	----	----	----	----
Bismuth, dissolved	7440-69-9	E421/VA	0.050	µg/L	<0.050	<0.050	----	----	----	----
Boron, dissolved	7440-42-8	E421/VA	10	µg/L	20	<10	----	----	----	----
Cadmium, dissolved	7440-43-9	E421/VA	0.0050	µg/L	0.0709	0.0148	----	----	----	----
Calcium, dissolved	7440-70-2	E421/VA	50	µg/L	75500	60700	----	----	----	----
Cesium, dissolved	7440-46-2	E421/VA	0.010	µg/L	<0.010	<0.010	----	----	----	----
Chromium, dissolved	7440-47-3	E421/VA	0.50	µg/L	1.20	<0.50	----	----	----	----
Cobalt, dissolved	7440-48-4	E421/VA	0.10	µg/L	0.44	<0.10	----	----	----	----
Copper, dissolved	7440-50-8	E421/VA	0.20	µg/L	16.4	2.33	----	----	----	----
Iron, dissolved	7439-89-6	E421/VA	10	µg/L	<10	<10	----	----	----	----
Lead, dissolved	7439-92-1	E421/VA	0.050	µg/L	0.065	<0.050	----	----	----	----
Lithium, dissolved	7439-93-2	E421/VA	1.0	µg/L	9.4	5.8	----	----	----	----
Magnesium, dissolved	7439-95-4	E421/VA	5.0	µg/L	13000	11700	----	----	----	----
Manganese, dissolved	7439-96-5	E421/VA	0.10	µg/L	5.36	1.08	----	----	----	----
Mercury, dissolved	7439-97-6	E509/VA	0.0050	µg/L	<0.0050	<0.0050	----	----	----	----
Molybdenum, dissolved	7439-98-7	E421/VA	0.050	µg/L	1.72	6.89	----	----	----	----
Nickel, dissolved	7440-02-0	E421/VA	0.50	µg/L	2.57	<0.50	----	----	----	----
Phosphorus, dissolved	7723-14-0	E421/VA	50	µg/L	<50	<50	----	----	----	----
Potassium, dissolved	7440-09-7	E421/VA	50	µg/L	2760	1680	----	----	----	----



Analytical Results

Sub-Matrix: Groundwater

(Matrix: Water)

					Client sample ID	MW20-1 (E323191)	Duplicate	----	----	----
					Client sampling date / time	28-May-2025 14:30	28-May-2025 11:15	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25B2767-006	VA25B2767-007	----	----	----	----
					Result	Result	----	----	----	----
Dissolved Metals										
Rubidium, dissolved	7440-17-7	E421/VA	0.20	µg/L	0.24	0.97	----	----	----	----
Selenium, dissolved	7782-49-2	E421/VA	0.050	µg/L	1.03	0.591	----	----	----	----
Silicon, dissolved	7440-21-3	E421/VA	50	µg/L	11200	9460	----	----	----	----
Silver, dissolved	7440-22-4	E421/VA	0.010	µg/L	<0.010	<0.010	----	----	----	----
Sodium, dissolved	7440-23-5	E421/VA	50	µg/L	4960	5580	----	----	----	----
Strontium, dissolved	7440-24-6	E421/VA	0.20	µg/L	480	313	----	----	----	----
Sulfur, dissolved	7704-34-9	E421/VA	500	µg/L	8840	20700	----	----	----	----
Tellurium, dissolved	13494-80-9	E421/VA	0.20	µg/L	<0.20	<0.20	----	----	----	----
Thallium, dissolved	7440-28-0	E421/VA	0.010	µg/L	<0.010	<0.010	----	----	----	----
Thorium, dissolved	7440-29-1	E421/VA	0.10	µg/L	<0.10	<0.10	----	----	----	----
Tin, dissolved	7440-31-5	E421/VA	0.10	µg/L	0.47	0.23	----	----	----	----
Titanium, dissolved	7440-32-6	E421/VA	0.30	µg/L	<0.30	<0.30	----	----	----	----
Tungsten, dissolved	7440-33-7	E421/VA	0.10	µg/L	<0.10	0.21	----	----	----	----
Uranium, dissolved	7440-61-1	E421/VA	0.010	µg/L	5.96	3.93	----	----	----	----
Vanadium, dissolved	7440-62-2	E421/VA	0.50	µg/L	1.28	0.79	----	----	----	----
Zinc, dissolved	7440-66-6	E421/VA	1.0	µg/L	9.7	4.9	----	----	----	----
Zirconium, dissolved	7440-67-7	E421/VA	0.20	µg/L	<0.20	<0.20	----	----	----	----
Dissolved mercury filtration location	----	EP509/VA	-	-	Field	Field	----	----	----	----
Dissolved metals filtration location	----	EP421/VA	-	-	Field	Field	----	----	----	----

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA25B2767	Page	: 1 of 21
Client	: Masse Environmental Consultants Ltd.	Laboratory	: ALS Environmental - Vancouver
Contact	: Ico de Zwart	Account Manager	: Can Dang
Address	: 812 Vernon Street Nelson BC Canada V1L 4G4	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 2016-503-RDKS Ootischenia	Date Samples Received	: 30-May-2025 12:00
PO	: ----	Issue Date	: 06-Jun-2025 14:02
C-O-C number	: 22-20250529		
Sampler	: Chris Stephanou		
Site	: RDCK		
Quote number	: ----		
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
- 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 : Analytical Method 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) MW07-05 (E335945)	E298	28-May-2025	31-May-2025	28 days	2 days	✓	06-Jun-2025	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Duplicate	E298	28-May-2025	31-May-2025	28 days	3 days	✓	06-Jun-2025	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW06-05 (E253791)	E298	28-May-2025	31-May-2025	28 days	3 days	✓	06-Jun-2025	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW14-01 (E303871)	E298	28-May-2025	31-May-2025	28 days	3 days	✓	06-Jun-2025	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW17-03 (E309169)	E298	28-May-2025	31-May-2025	28 days	3 days	✓	06-Jun-2025	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW1-95 (E232086)	E298	28-May-2025	31-May-2025	28 days	3 days	✓	06-Jun-2025	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW20-1 (E323191)	E298	28-May-2025	31-May-2025	28 days	3 days	✓	06-Jun-2025	28 days	3 days	✓



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

Analyte Group : Analytical Method 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 : Bromide in Water by IC (Low Level)										
HDPE MW07-05 (E335945)	E235.Br-L	28-May-2025	31-May-2025	28 days	2 days	✓	31-May-2025	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE Duplicate	E235.Br-L	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE MW06-05 (E253791)	E235.Br-L	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE MW14-01 (E303871)	E235.Br-L	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE MW17-03 (E309169)	E235.Br-L	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE MW1-95 (E232086)	E235.Br-L	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE MW20-1 (E323191)	E235.Br-L	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW07-05 (E335945)	E235.Cl	28-May-2025	31-May-2025	28 days	2 days	✓	31-May-2025	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Duplicate	E235.Cl	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓



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

Analyte Group : Analytical Method	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	
Anions and Nutrients : Chloride in Water by IC										
HDPE MW06-05 (E253791)	E235.Cl	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW14-01 (E303871)	E235.Cl	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW17-03 (E309169)	E235.Cl	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW1-95 (E232086)	E235.Cl	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW20-1 (E323191)	E235.Cl	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW07-05 (E335945)	E235.F	28-May-2025	31-May-2025	28 days	2 days	✓	31-May-2025	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Duplicate	E235.F	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW06-05 (E253791)	E235.F	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW14-01 (E303871)	E235.F	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓



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

Analyte Group : Analytical Method	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 MW17-03 (E309169)	E235.F	28-May-2025	31-May-2025	28 days	3 days	✔	31-May-2025	28 days	3 days	✔
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW1-95 (E232086)	E235.F	28-May-2025	31-May-2025	28 days	3 days	✔	31-May-2025	28 days	3 days	✔
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW20-1 (E323191)	E235.F	28-May-2025	31-May-2025	28 days	3 days	✔	31-May-2025	28 days	3 days	✔
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE MW07-05 (E335945)	E235.NO3-L	28-May-2025	31-May-2025	3 days	2 days	✔	31-May-2025	3 days	2 days	✔
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Duplicate	E235.NO3-L	28-May-2025	31-May-2025	3 days	3 days	✔	31-May-2025	3 days	3 days	✔
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE MW06-05 (E253791)	E235.NO3-L	28-May-2025	31-May-2025	3 days	3 days	✔	31-May-2025	3 days	3 days	✔
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE MW14-01 (E303871)	E235.NO3-L	28-May-2025	31-May-2025	3 days	3 days	✔	31-May-2025	3 days	3 days	✔
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE MW17-03 (E309169)	E235.NO3-L	28-May-2025	31-May-2025	3 days	3 days	✔	31-May-2025	3 days	3 days	✔
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE MW1-95 (E232086)	E235.NO3-L	28-May-2025	31-May-2025	3 days	3 days	✔	31-May-2025	3 days	3 days	✔



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

Analyte Group : Analytical Method 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 MW20-1 (E323191)	E235.NO3-L	28-May-2025	31-May-2025	3 days	3 days	✓	31-May-2025	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE MW07-05 (E335945)	E235.NO2-L	28-May-2025	31-May-2025	3 days	2 days	✓	31-May-2025	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Duplicate	E235.NO2-L	28-May-2025	31-May-2025	3 days	3 days	✓	31-May-2025	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE MW06-05 (E253791)	E235.NO2-L	28-May-2025	31-May-2025	3 days	3 days	✓	31-May-2025	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE MW14-01 (E303871)	E235.NO2-L	28-May-2025	31-May-2025	3 days	3 days	✓	31-May-2025	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE MW17-03 (E309169)	E235.NO2-L	28-May-2025	31-May-2025	3 days	3 days	✓	31-May-2025	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE MW1-95 (E232086)	E235.NO2-L	28-May-2025	31-May-2025	3 days	3 days	✓	31-May-2025	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE MW20-1 (E323191)	E235.NO2-L	28-May-2025	31-May-2025	3 days	3 days	✓	31-May-2025	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW07-05 (E335945)	E235.SO4	28-May-2025	31-May-2025	28 days	2 days	✓	31-May-2025	28 days	2 days	✓



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

Analyte Group : Analytical Method	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	
Anions and Nutrients : Sulfate in Water by IC										
HDPE Duplicate	E235.SO4	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW06-05 (E253791)	E235.SO4	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW14-01 (E303871)	E235.SO4	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW17-03 (E309169)	E235.SO4	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW1-95 (E232086)	E235.SO4	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW20-1 (E323191)	E235.SO4	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW07-05 (E335945)	E318	28-May-2025	31-May-2025	28 days	2 days	✓	04-Jun-2025	28 days	2 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) Duplicate	E318	28-May-2025	31-May-2025	28 days	3 days	✓	04-Jun-2025	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW06-05 (E253791)	E318	28-May-2025	31-May-2025	28 days	3 days	✓	04-Jun-2025	28 days	3 days	✓



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

Analyte Group : Analytical Method 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 : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW14-01 (E303871)	E318	28-May-2025	31-May-2025	28 days	3 days	✓	04-Jun-2025	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW17-03 (E309169)	E318	28-May-2025	31-May-2025	28 days	3 days	✓	04-Jun-2025	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW1-95 (E232086)	E318	28-May-2025	31-May-2025	28 days	3 days	✓	04-Jun-2025	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW20-1 (E323191)	E318	28-May-2025	31-May-2025	28 days	3 days	✓	04-Jun-2025	28 days	3 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) Duplicate	E509	28-May-2025	05-Jun-2025	28 days	8 days	✓	05-Jun-2025	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) MW06-05 (E253791)	E509	28-May-2025	05-Jun-2025	28 days	8 days	✓	05-Jun-2025	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) MW07-05 (E335945)	E509	28-May-2025	05-Jun-2025	28 days	8 days	✓	05-Jun-2025	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) MW14-01 (E303871)	E509	28-May-2025	05-Jun-2025	28 days	8 days	✓	05-Jun-2025	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) MW17-03 (E309169)	E509	28-May-2025	05-Jun-2025	28 days	8 days	✓	05-Jun-2025	28 days	8 days	✓



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

Analyte Group : Analytical Method	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 Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) MW1-95 (E232086)	E509	28-May-2025	05-Jun-2025	28 days	8 days	✓	05-Jun-2025	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) MW20-1 (E323191)	E509	28-May-2025	05-Jun-2025	28 days	8 days	✓	05-Jun-2025	28 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Duplicate	E421	28-May-2025	03-Jun-2025	180 days	6 days	✓	04-Jun-2025	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) MW06-05 (E253791)	E421	28-May-2025	03-Jun-2025	180 days	6 days	✓	04-Jun-2025	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) MW07-05 (E335945)	E421	28-May-2025	03-Jun-2025	180 days	6 days	✓	04-Jun-2025	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) MW14-01 (E303871)	E421	28-May-2025	03-Jun-2025	180 days	6 days	✓	04-Jun-2025	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) MW17-03 (E309169)	E421	28-May-2025	03-Jun-2025	180 days	6 days	✓	04-Jun-2025	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) MW1-95 (E232086)	E421	28-May-2025	03-Jun-2025	180 days	6 days	✓	04-Jun-2025	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) MW20-1 (E323191)	E421	28-May-2025	03-Jun-2025	180 days	6 days	✓	04-Jun-2025	180 days	6 days	✓



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

Analyte Group : Analytical Method	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	
Organic / Inorganic Carbon : Total Inorganic Carbon by Combustion (Low Level)										
HDPE Duplicate	E354-L	28-May-2025	----	----	----		01-Jun-2025	14 days	4 days	✓
Organic / Inorganic Carbon : Total Inorganic Carbon by Combustion (Low Level)										
HDPE MW06-05 (E253791)	E354-L	28-May-2025	----	----	----		01-Jun-2025	14 days	4 days	✓
Organic / Inorganic Carbon : Total Inorganic Carbon by Combustion (Low Level)										
HDPE MW07-05 (E335945)	E354-L	28-May-2025	----	----	----		01-Jun-2025	14 days	4 days	✓
Organic / Inorganic Carbon : Total Inorganic Carbon by Combustion (Low Level)										
HDPE MW14-01 (E303871)	E354-L	28-May-2025	----	----	----		01-Jun-2025	14 days	4 days	✓
Organic / Inorganic Carbon : Total Inorganic Carbon by Combustion (Low Level)										
HDPE MW17-03 (E309169)	E354-L	28-May-2025	----	----	----		01-Jun-2025	14 days	4 days	✓
Organic / Inorganic Carbon : Total Inorganic Carbon by Combustion (Low Level)										
HDPE MW1-95 (E232086)	E354-L	28-May-2025	----	----	----		01-Jun-2025	14 days	4 days	✓
Organic / Inorganic Carbon : Total Inorganic Carbon by Combustion (Low Level)										
HDPE MW20-1 (E323191)	E354-L	28-May-2025	----	----	----		01-Jun-2025	14 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) MW07-05 (E335945)	E355-L	28-May-2025	31-May-2025	28 days	2 days	✓	31-May-2025	28 days	2 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) Duplicate	E355-L	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓



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Analyte Group : Analytical Method	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	
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) MW06-05 (E253791)	E355-L	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) MW14-01 (E303871)	E355-L	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) MW17-03 (E309169)	E355-L	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) MW1-95 (E232086)	E355-L	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) MW20-1 (E323191)	E355-L	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW07-05 (E335945)	E290	28-May-2025	31-May-2025	14 days	2 days	✓	31-May-2025	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Duplicate	E290	28-May-2025	31-May-2025	14 days	3 days	✓	31-May-2025	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW06-05 (E253791)	E290	28-May-2025	31-May-2025	14 days	3 days	✓	31-May-2025	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW14-01 (E303871)	E290	28-May-2025	31-May-2025	14 days	3 days	✓	31-May-2025	14 days	3 days	✓



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

Analyte Group : Analytical Method 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 MW17-03 (E309169)	E290	28-May-2025	31-May-2025	14 days	3 days	✓	31-May-2025	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW1-95 (E232086)	E290	28-May-2025	31-May-2025	14 days	3 days	✓	31-May-2025	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW20-1 (E323191)	E290	28-May-2025	31-May-2025	14 days	3 days	✓	31-May-2025	14 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE MW07-05 (E335945)	E100	28-May-2025	31-May-2025	28 days	2 days	✓	31-May-2025	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE Duplicate	E100	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE MW06-05 (E253791)	E100	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE MW14-01 (E303871)	E100	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE MW17-03 (E309169)	E100	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE MW1-95 (E232086)	E100	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓



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

Analyte Group : Analytical Method	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	
Physical Tests : Conductivity in Water										
HDPE MW20-1 (E323191)	E100	28-May-2025	31-May-2025	28 days	3 days	✓	31-May-2025	28 days	3 days	✓
Physical Tests : pH by Meter										
HDPE MW07-05 (E335945)	E108	28-May-2025	31-May-2025	0.25 hrs	59 hrs	✖ EHTR-FM	31-May-2025	0.25 hrs	59 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE MW06-05 (E253791)	E108	28-May-2025	31-May-2025	0.25 hrs	60 hrs	✖ EHTR-FM	31-May-2025	0.25 hrs	60 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE MW20-1 (E323191)	E108	28-May-2025	31-May-2025	0.25 hrs	61 hrs	✖ EHTR-FM	31-May-2025	0.25 hrs	61 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE MW14-01 (E303871)	E108	28-May-2025	31-May-2025	0.25 hrs	63 hrs	✖ EHTR-FM	31-May-2025	0.25 hrs	63 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE Duplicate	E108	28-May-2025	31-May-2025	0.25 hrs	64 hrs	✖ EHTR-FM	31-May-2025	0.25 hrs	64 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE MW17-03 (E309169)	E108	28-May-2025	31-May-2025	0.25 hrs	64 hrs	✖ EHTR-FM	31-May-2025	0.25 hrs	64 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE MW1-95 (E232086)	E108	28-May-2025	31-May-2025	0.25 hrs	67 hrs	✖ EHTR-FM	31-May-2025	0.25 hrs	67 hrs	✖ EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE MW06-05 (E253791)	E162	28-May-2025	----	----	----		04-Jun-2025	7 days	6 days	✓



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

Analyte Group : Analytical Method 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 : TDS by Gravimetry										
HDPE MW07-05 (E335945)	E162	28-May-2025	----	----	----		04-Jun-2025	7 days	6 days	✔
Physical Tests : TDS by Gravimetry										
HDPE MW14-01 (E303871)	E162	28-May-2025	----	----	----		04-Jun-2025	7 days	6 days	✔
Physical Tests : TDS by Gravimetry										
HDPE MW20-1 (E323191)	E162	28-May-2025	----	----	----		04-Jun-2025	7 days	6 days	✔
Physical Tests : TDS by Gravimetry										
HDPE Duplicate	E162	28-May-2025	----	----	----		04-Jun-2025	7 days	7 days	✔
Physical Tests : TDS by Gravimetry										
HDPE MW17-03 (E309169)	E162	28-May-2025	----	----	----		04-Jun-2025	7 days	7 days	✔
Physical Tests : TDS by Gravimetry										
HDPE MW1-95 (E232086)	E162	28-May-2025	----	----	----		04-Jun-2025	7 days	7 days	✔
Physical Tests : TSS by Gravimetry										
HDPE MW06-05 (E253791)	E160	28-May-2025	----	----	----		04-Jun-2025	7 days	6 days	✔
Physical Tests : TSS by Gravimetry										
HDPE MW07-05 (E335945)	E160	28-May-2025	----	----	----		04-Jun-2025	7 days	6 days	✔
Physical Tests : TSS by Gravimetry										
HDPE MW14-01 (E303871)	E160	28-May-2025	----	----	----		04-Jun-2025	7 days	6 days	✔



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

Analyte Group : Analytical Method 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 MW20-1 (E323191)	E160	28-May-2025	----	----	----		04-Jun-2025	7 days	6 days	✔
Physical Tests : TSS by Gravimetry										
HDPE Duplicate	E160	28-May-2025	----	----	----		04-Jun-2025	7 days	7 days	✔
Physical Tests : TSS by Gravimetry										
HDPE MW17-03 (E309169)	E160	28-May-2025	----	----	----		04-Jun-2025	7 days	7 days	✔
Physical Tests : TSS by Gravimetry										
HDPE MW1-95 (E232086)	E160	28-May-2025	----	----	----		04-Jun-2025	7 days	7 days	✔

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

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)							
Conductivity in Water	E100	2025588	1	15	6.6	5.0	✔
pH by Meter	E108	2025587	1	15	6.6	5.0	✔
TSS by Gravimetry	E160	2031419	2	40	5.0	5.0	✔
TDS by Gravimetry	E162	2031416	2	40	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	2025595	1	8	12.5	5.0	✔
Chloride in Water by IC	E235.Cl	2025593	1	12	8.3	5.0	✔
Fluoride in Water by IC	E235.F	2025594	1	11	9.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	2025591	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	2025592	1	17	5.8	5.0	✔
Sulfate in Water by IC	E235.SO4	2025590	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	2025589	1	9	11.1	5.0	✔
Ammonia by Fluorescence	E298	2025612	1	8	12.5	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	2025610	1	7	14.2	5.0	✔
Total Inorganic Carbon by Combustion (Low Level)	E354-L	2026902	1	11	9.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	2025611	1	7	14.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	2027864	1	19	5.2	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	2034060	2	26	7.6	5.0	✔
Laboratory Control Samples (LCS)							
Conductivity in Water	E100	2025588	1	15	6.6	5.0	✔
pH by Meter	E108	2025587	1	15	6.6	5.0	✔
TSS by Gravimetry	E160	2031419	2	40	5.0	5.0	✔
TDS by Gravimetry	E162	2031416	2	40	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	2025595	1	8	12.5	5.0	✔
Chloride in Water by IC	E235.Cl	2025593	1	12	8.3	5.0	✔
Fluoride in Water by IC	E235.F	2025594	1	11	9.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	2025591	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	2025592	1	17	5.8	5.0	✔
Sulfate in Water by IC	E235.SO4	2025590	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	2025589	1	9	11.1	5.0	✔
Ammonia by Fluorescence	E298	2025612	1	8	12.5	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	2025610	1	7	14.2	5.0	✔
Total Inorganic Carbon by Combustion (Low Level)	E354-L	2026902	1	11	9.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	2025611	1	7	14.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	2027864	1	19	5.2	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	2034060	2	26	7.6	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
Method Blanks (MB)							
Conductivity in Water	E100	2025588	1	15	6.6	5.0	✔
TSS by Gravimetry	E160	2031419	2	40	5.0	5.0	✔
TDS by Gravimetry	E162	2031416	2	40	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	2025595	1	8	12.5	5.0	✔
Chloride in Water by IC	E235.Cl	2025593	1	12	8.3	5.0	✔
Fluoride in Water by IC	E235.F	2025594	1	11	9.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	2025591	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	2025592	1	17	5.8	5.0	✔
Sulfate in Water by IC	E235.SO4	2025590	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	2025589	1	9	11.1	5.0	✔
Ammonia by Fluorescence	E298	2025612	1	8	12.5	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	2025610	1	7	14.2	5.0	✔
Total Inorganic Carbon by Combustion (Low Level)	E354-L	2026902	1	11	9.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	2025611	1	7	14.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	2027864	1	19	5.2	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	2034060	2	26	7.6	5.0	✔
Matrix Spikes (MS)							
Bromide in Water by IC (Low Level)	E235.Br-L	2025595	1	8	12.5	5.0	✔
Chloride in Water by IC	E235.Cl	2025593	1	12	8.3	5.0	✔
Fluoride in Water by IC	E235.F	2025594	1	11	9.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	2025591	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	2025592	1	17	5.8	5.0	✔
Sulfate in Water by IC	E235.SO4	2025590	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	2025612	1	8	12.5	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	2025610	1	7	14.2	5.0	✔
Total Inorganic Carbon by Combustion (Low Level)	E354-L	2026902	1	11	9.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	2025611	1	7	14.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	2027864	1	19	5.2	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	2034060	2	26	7.6	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 ALS Environmental - Vancouver	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 ALS Environmental - Vancouver	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.
TSS by Gravimetry	E160 ALS Environmental - Vancouver	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.
TDS by Gravimetry	E162 ALS Environmental - Vancouver	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at $180 \pm 2^\circ\text{C}$ for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl ALS Environmental - Vancouver	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 ALS Environmental - Vancouver	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 ALS Environmental - Vancouver	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 ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Sulfate in Water by IC	E235.SO4 ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 ALS Environmental - Vancouver	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.
Ammonia by Fluorescence	E298 ALS Environmental - Vancouver	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 Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 ALS Environmental - Vancouver	Water	Method Fialab 100, 2018	TKN 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 Inorganic Carbon by Combustion (Low Level)	E354-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Total Inorganic Carbon is determined by the high temperature combustion method with measurement by an infrared detector, where the sample is acidified in a reaction chamber to convert all inorganic carbons (carbonates) to carbon dioxide for analysis.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L ALS Environmental - Vancouver	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 carbonate-based Inorganic Carbon (IC). Analysis is by high temperature combustion with infrared detection of CO ₂ . Forms of carbon associated with inorganic or organic molecules (e.g. SCN and CN) are included in NPOC if they are not removed by purging under acidic conditions. Notably, NPOC excludes most volatile organic compounds and free cyanide. For samples where the majority of Total Carbon is inorganic, this method provides greater accuracy and reliability versus the TOC by subtraction method (TC minus TIC).
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Vancouver	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 Mercury in Water by CVAAS	E509 ALS Environmental - Vancouver	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.
Dissolved Hardness (Calculated)	EC100 ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO ₃), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO ₃ 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.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
---------------------	--------------	--------	------------------	---------------------



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Preparation for Ammonia	EP298 ALS Environmental - Vancouver	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 ALS Environmental - Vancouver	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 ALS Environmental - Vancouver	Water		Preparation for Total Organic Carbon by Combustion
Dissolved Metals Water Filtration	EP421 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO ₃ .
Dissolved Mercury Water Filtration	EP509 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

QUALITY CONTROL REPORT

Work Order	: VA25B2767	Page	: 1 of 13
Client	: Masse Environmental Consultants Ltd.	Laboratory	: ALS Environmental - Vancouver
Contact	: Ico de Zwart	Account Manager	: Can Dang
Address	: 812 Vernon Street Nelson BC Canada V1L 4G4	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 2016-503-RDKS Ootischenia	Date Samples Received	: 30-May-2025 12:00
PO	: ----	Date Analysis Commenced	: 31-May-2025
C-O-C number	: 22-20250529	Issue Date	: 06-Jun-2025 13:57
Sampler	: Chris Stephanou		
Site	: RDCK		
Quote number	: ----		
No. of samples received	: 7		
No. of samples analysed	: 7		

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
Dan Gebert	Supervisor - Metals Mercury & Speciation	Vancouver Metals, Burnaby, British Columbia
Erika Vanegas	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Lindsay Gung	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Monica Ko	Supervisor - Inorganic	Vancouver Inorganics, Burnaby, British Columbia
Owen Cheng		Vancouver Metals, Burnaby, British Columbia
Rebecca Sit	Supervisor - Organics Extractions	Vancouver Inorganics, Burnaby, British Columbia
Robert Nguyen	Analyst	Vancouver Metals, Burnaby, British Columbia
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.



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: 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
Physical Tests (QC Lot: 2025587)											
VA25B2608-001	Anonymous	pH	----	E108	0.10	pH units	8.11	8.11	0.00%	4%	----
Physical Tests (QC Lot: 2025588)											
VA25B2608-001	Anonymous	Conductivity	----	E100	2.0	µS/cm	2970	2970	0.00%	10%	----
Physical Tests (QC Lot: 2025589)											
VA25B2608-001	Anonymous	Alkalinity, total (as CaCO ₃)	----	E290	1.0	mg/L	155	156	0.974%	20%	----
Physical Tests (QC Lot: 2031416)											
VA25B2560-001	Anonymous	Solids, total dissolved [TDS]	----	E162	20	mg/L	238	240	0.838%	20%	----
Physical Tests (QC Lot: 2031417)											
VA25B2767-002	MW06-05 (E253791)	Solids, total dissolved [TDS]	----	E162	20	mg/L	315	306	2.74%	20%	----
Physical Tests (QC Lot: 2031419)											
VA25B2560-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 2031420)											
VA25B2767-002	MW06-05 (E253791)	Solids, total suspended [TSS]	----	E160	3.0	mg/L	4.3	4.3	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2025590)											
VA25B2744-001	Anonymous	Sulfate (as SO ₄)	14808-79-8	E235.SO4	6.00	mg/L	2740	2770	0.845%	20%	----
Anions and Nutrients (QC Lot: 2025591)											
VA25B2744-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0200	mg/L	<0.0200	<0.0200	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2025592)											
VA25B2744-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.100	mg/L	1.44	1.44	0.134%	20%	----
Anions and Nutrients (QC Lot: 2025593)											
VA25B2744-001	Anonymous	Chloride	16887-00-6	E235.Cl	10.0	mg/L	20.0	20.2	0.15	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2025594)											
VA25B2744-001	Anonymous	Fluoride	16984-48-8	E235.F	0.400	mg/L	1.39	1.36	0.036	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2025595)											
VA25B2744-001	Anonymous	Bromide	24959-67-9	E235.Br-L	1.00	mg/L	<1.00	<1.00	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2025610)											
VA25B2767-001	MW1-95 (E232086)	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.131	0.125	0.006	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2025612)											
VA25B2767-001	MW1-95 (E232086)	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 2025611)											



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
Organic / Inorganic Carbon (QC Lot: 2025611) - continued											
VA25B2767-001	MW1-95 (E232086)	Carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.51	1.47	0.04	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 2026902)											
VA25B2767-001	MW1-95 (E232086)	Carbon, total inorganic [TIC]	----	E354-L	0.50	mg/L	37.4	37.9	1.34%	20%	----
Dissolved Metals (QC Lot: 2027864)											
VA25B2763-019	Anonymous	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	1.07	1.06	0.935%	20%	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.528	0.540	2.28%	20%	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00766	0.00797	3.86%	20%	----
		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	<0.000050	<0.000050	0	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	0.0000929	0.0000994	6.70%	20%	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	328	335	1.97%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.0150	0.0147	1.57%	20%	----
		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	0.00048	0.00047	0.000010	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00367	0.00365	0.602%	20%	----
		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	0.0107	0.0108	0.184%	20%	----
		Magnesium, dissolved	7439-95-4	E421	0.100	mg/L	99.5	96.6	3.02%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0198	0.0198	0.0191%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0609	0.0599	1.71%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0383	0.0381	0.436%	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	0.100	mg/L	4.04	4.01	0.904%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00954	0.00958	0.449%	20%	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.00507	0.00509	0.362%	20%	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.41	5.47	1.09%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000023	0.000023	0.0000005	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	0.958	0.944	1.44%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.71	1.68	1.94%	20%	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	344	348	1.06%	20%	----
		Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	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
Dissolved Metals (QC Lot: 2027864) - continued											
VA25B2763-019	Anonymous	Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.00345	0.00342	0.824%	20%	----
		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	0.00767	0.00767	0.0767%	20%	----
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0519	0.0525	1.04%	20%	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00060	0.00061	0.000010	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0074	0.0074	0.00007	Diff <2x LOR	----
		Zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 2034060)											
VA25B2763-016	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 2034061)											
VA25B2767-006	MW20-1 (E323191)	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----



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
Physical Tests (QCLot: 2025588)						
Conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 2025589)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 2031416)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 2031417)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 2031419)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 2031420)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Anions and Nutrients (QCLot: 2025590)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 2025591)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 2025592)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 2025593)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 2025594)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 2025595)						
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 2025610)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 2025612)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Organic / Inorganic Carbon (QCLot: 2025611)						
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 2026902)						
Carbon, total inorganic [TIC]	----	E354-L	0.5	mg/L	<0.50	----
Dissolved Metals (QCLot: 2027864)						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 2027864) - continued						
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	----
Tin, dissolved	7440-31-5	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
Dissolved Metals (QCLot: 2027864) - continued						
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	----
Dissolved Metals (QCLot: 2034060)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 2034061)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



Laboratory Control Sample (LCS) Report

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

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 2025587)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 2025588)									
Conductivity	----	E100	1	µS/cm	147 µS/cm	100	90.0	110	----
Physical Tests (QCLot: 2025589)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	106	85.0	115	----
Physical Tests (QCLot: 2031416)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	98.4	85.0	115	----
Physical Tests (QCLot: 2031417)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	97.3	85.0	115	----
Physical Tests (QCLot: 2031419)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	98.9	85.0	115	----
Physical Tests (QCLot: 2031420)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	93.6	85.0	115	----
Anions and Nutrients (QCLot: 2025590)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	94.2	90.0	110	----
Anions and Nutrients (QCLot: 2025591)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	96.7	90.0	110	----
Anions and Nutrients (QCLot: 2025592)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.0	90.0	110	----
Anions and Nutrients (QCLot: 2025593)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	97.7	90.0	110	----
Anions and Nutrients (QCLot: 2025594)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.6	90.0	110	----
Anions and Nutrients (QCLot: 2025595)									
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	96.2	85.0	115	----
Anions and Nutrients (QCLot: 2025610)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	99.1	75.0	125	----
Anions and Nutrients (QCLot: 2025612)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	----
Organic / Inorganic Carbon (QCLot: 2025611)									



Sub-Matrix: Water					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Target Concentration	LCS	Low	High	
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Organic / Inorganic Carbon (QCLot: 2025611) - continued									
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	103	80.0	120	----
Organic / Inorganic Carbon (QCLot: 2026902)									
Carbon, total inorganic [TIC]	----	E354-L	0.5	mg/L	8 mg/L	101	80.0	120	----
Dissolved Metals (QCLot: 2027864)									
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	105	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	98.9	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	107	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	97.8	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	106	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	103	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	101	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.9	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	92.8	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	102	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	105	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	108	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	110	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	93.6	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	97.8	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	112	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	83.5	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	99.6	80.0	120	----



Sub-Matrix: Water					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Target Concentration	LCS	Low	High	Qualifier
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 2027864) - continued									
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	98.8	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	104	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	104	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	102	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	104	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	95.9	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0 mg/L	93.1	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0 mg/L	95.8	80.0	120	----



Matrix Spike (MS) Report

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 >= 1x spike level.

Laboratory sample ID					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
Client sample ID	Analyte	CAS Number	Method							
Anions and Nutrients (QCLot: 2025590)										
VA25B2767-001	MW1-95 (E232086)	Sulfate (as SO4)	14808-79-8	E235.SO4	99.0 mg/L	100 mg/L	99.0	75.0	125	----
Anions and Nutrients (QCLot: 2025591)										
VA25B2767-001	MW1-95 (E232086)	Nitrite (as N)	14797-65-0	E235.NO2-L	0.491 mg/L	0.5 mg/L	98.2	75.0	125	----
Anions and Nutrients (QCLot: 2025592)										
VA25B2767-001	MW1-95 (E232086)	Nitrate (as N)	14797-55-8	E235.NO3-L	2.52 mg/L	2.5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 2025593)										
VA25B2767-001	MW1-95 (E232086)	Chloride	16887-00-6	E235.Cl	99.7 mg/L	100 mg/L	99.7	75.0	125	----
Anions and Nutrients (QCLot: 2025594)										
VA25B2754-001	Anonymous	Fluoride	16984-48-8	E235.F	1.00 mg/L	1 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 2025595)										
VA25B2767-001	MW1-95 (E232086)	Bromide	24959-67-9	E235.Br-L	0.494 mg/L	0.5 mg/L	98.8	75.0	125	----
Anions and Nutrients (QCLot: 2025610)										
VA25B2767-002	MW06-05 (E253791)	Kjeldahl nitrogen, total [TKN]	----	E318	2.51 mg/L	2.5 mg/L	100	70.0	130	----
Anions and Nutrients (QCLot: 2025612)										
VA25B2767-002	MW06-05 (E253791)	Ammonia, total (as N)	7664-41-7	E298	0.105 mg/L	0.1 mg/L	105	75.0	125	----
Organic / Inorganic Carbon (QCLot: 2025611)										
VA25B2767-002	MW06-05 (E253791)	Carbon, total organic [TOC]	----	E355-L	4.81 mg/L	5 mg/L	96.2	70.0	130	----
Organic / Inorganic Carbon (QCLot: 2026902)										
VA25B2767-002	MW06-05 (E253791)	Carbon, total inorganic [TIC]	----	E354-L	ND mg/L	----	ND	70.0	130	----
Dissolved Metals (QCLot: 2027864)										
VA25B2763-020	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.208 mg/L	0.2 mg/L	104	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	ND mg/L	----	ND	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	ND mg/L	----	ND	70.0	130	----
		Barium, dissolved	7440-39-3	E421	0.0200 mg/L	0.02 mg/L	99.8	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00934 mg/L	0.01 mg/L	93.4	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00394 mg/L	0.004 mg/L	98.5	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	----	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.00953 mg/L	0.01 mg/L	95.3	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0191 mg/L	0.02 mg/L	95.5	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: 2027864) - continued										
VA25B2763-020	Anonymous	Iron, dissolved	7439-89-6	E421	1.90 mg/L	2 mg/L	95.2	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0193 mg/L	0.02 mg/L	96.5	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.0967 mg/L	0.1 mg/L	96.7	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	----	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	ND mg/L	----	ND	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	ND mg/L	----	ND	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	11.2 mg/L	10 mg/L	112	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	4.10 mg/L	4 mg/L	103	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0216 mg/L	0.02 mg/L	108	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	ND mg/L	----	ND	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	9.52 mg/L	10 mg/L	95.2	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00405 mg/L	0.004 mg/L	101	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	2.10 mg/L	2 mg/L	105	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	ND mg/L	----	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	ND mg/L	----	ND	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00384 mg/L	0.004 mg/L	96.0	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0157 mg/L	0.02 mg/L	78.4	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0199 mg/L	0.02 mg/L	99.7	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0429 mg/L	0.04 mg/L	107	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	ND mg/L	----	ND	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.373 mg/L	0.4 mg/L	93.2	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0421 mg/L	0.04 mg/L	105	70.0	130	----
Dissolved Metals (QCLot: 2034060)										
VA25B2763-017	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000851 mg/L	0 mg/L	85.1	70.0	130	----
Dissolved Metals (QCLot: 2034061)										
VA25B2767-007	Duplicate	Mercury, dissolved	7439-97-6	E509	0.0000872 mg/L	0 mg/L	87.2	70.0	130	----



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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 22 - 10150529

Page 1 of 1

Environmental Division
Vancouver

Work Order Reference
VA25B2767



Telephone: +1 604 200 4760

Report To Contact and company name below will appear on the final report.		Reports / Recipients		Turnaround Time (TAT) Requested	
Company:	Masse Environmental	Select Report Format:	☒ PDF ☒ EXCEL ☒ EDD (DIGITAL)	☒ Routine [R] if received by 3pm M-F - no surcharges apply	
Contact:	Ico deZwart	Merge QC/QCI Reports with COA	☒ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum	
Phone:	250-505-3479	☐ Compare Results to Criteria on Report - provide details below if box checked		☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum	
Company address below will appear on the final report		Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX	☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum	
Street:	812 Vernon St.	Email 1 or Fax:	ico@masseenvironmental.com	☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum	
City/Province:	Nelson, BC	Email 2:	chris@masseenvironmental.com	☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.	
Postal Code:	V1L 4G4	Email 3:	jenn@masseenvironmental.com	Additional fees may apply to rush requests on weekends, s	
Invoice To:	Same as Report To ☒ YES ☐ NO	Invoice Recipients		Date and Time Required for all E&P TATs:	
Copy of Invoice with Report ☒ YES ☐ NO		Select Invoice Distribution:	☒ EMAIL ☐ MAIL ☐ FAX	For all tests with rush TATs requested, please con	
Company:		Email 1 or Fax:	lise@masseenvironmental.com	Analysis Requ	
Contact:		Email 2:		Indicate Filtered (F), Preserved (P) or Filtered and P	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	VA24-MASS200-001	AFE/Cost Center:	PO#
Job #:	2016-503- RDCK Ootischenia	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (ALS use only):		ALS Contact:	Can Dang	Sampler:	C.Stephanou
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	
MW1-95 (E232086)		28-May-25	9:40	GW	4
MW06-05 (E253791)		28-May-25	15:40	GW	4
MW07-05 (E335945)		28-May-25	16:30	GW	4
MW14-01 (E303871)		28-May-25	12:45	GW	4
MW17-03 (E309169)		28-May-25	11:15	GW	4
MW20-1 (E323191)		28-May-25	14:30	GW	4
Duplicate		28-May-25	11:15	GW	4

Drinking Water (DW) Samples¹ (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? ☐ YES ☐ NO		General Chemistry (mg/L): pH, conductivity, hardness, total alkalinity, anions scan, TOC, TIC, COD. Nutrients (mg/L): ammonia, nitrate, nitrite. Dissolved metals including mercury (µg/L)		Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED	
Are samples for human consumption/ use? ☐ YES ☐ NO				Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO	
				Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A	
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)		FINAL SHIPMENT RECEPTION (ALS use only)	
Released by:	Date:	Received by:	Date:	Received by:	Date:
	28-May-2025			AS	30/05/2025
Time:	12:00	Time:		Time:	12:00 PM

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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.

FEB 2022 FRONT

CERTIFICATE OF ANALYSIS

Work Order	: VA25B3738	Laboratory	: ALS Environmental - Vancouver
Client	: Masse Environmental Consultants Ltd.	Account Manager	: Can Dang
Contact	: Ico de Zwart	Address	: 8081 Lougheed Highway
Address	: 812 Vernon Street Nelson British Columbia Canada V1L 4G4		: Burnaby BC Canada V5A 1W9
Telephone	: ----	E-mail	: Can.Dang@ALSGlobal.com
Project	: 2016-503-RDKS Ootischenia	Telephone	: +1 604 253 4188
PO	: ----	Date Samples Received	: 10-Jun-2025 11:45
C-O-C number	: 22-20250609	Date Analysis Commenced	: 11-Jun-2025
Sampler	: Chris Stephanou	Issue Date	: 18-Jun-2025 09:34
Site	: RDCK		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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>
Angelo Salandanan		Metals, Burnaby, British Columbia
Kevin Duarte		Metals, Burnaby, British Columbia
Lindsay Gung		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 units
mg/L	milligrams per litre
pH units	pH units
µg/L	micrograms per litre
µS/cm	microsiemens per centimetre

<: 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
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.



Analytical Results

Sub-Matrix: Groundwater

(Matrix: Water)

Client sample ID					MW14-02	----	----	----	----
Client sampling date / time					09-Jun-2025 11:10	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25B3738-001	----	----	----	----
Result					Result	----	----	----	----
Physical Tests									
Alkalinity, total (as CaCO ₃)	----	E290/VA	1.0	mg/L	295	----	----	----	----
Conductivity	----	E100/VA	2.0	µS/cm	684	----	----	----	----
Hardness (as CaCO ₃), dissolved	----	EC100/VA	0.60	mg/L	296	----	----	----	----
pH	----	E108/VA	0.10	pH units	8.01	----	----	----	----
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L	432	----	----	----	----
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L	11.2	----	----	----	----
Anions and Nutrients									
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L	0.0106	----	----	----	----
Bromide	24959-67-9	E235.Br-L/VA	0.050	mg/L	<0.250 DLDS	----	----	----	----
Chloride	16887-00-6	E235.Cl/VA	0.50	mg/L	28.1	----	----	----	----
Fluoride	16984-48-8	E235.F/VA	0.020	mg/L	<0.100 DLDS	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318/VA	0.050	mg/L	0.517	----	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	0.0050	mg/L	<0.0250 DLDS	----	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	0.0010	mg/L	<0.0050 DLDS	----	----	----	----
Sulfate (as SO ₄)	14808-79-8	E235.SO4/VA	0.30	mg/L	45.9	----	----	----	----
Organic / Inorganic Carbon									
Carbon, total organic [TOC]	----	E355-L/VA	0.50	mg/L	7.20	----	----	----	----
Dissolved Metals									
Aluminum, dissolved	7429-90-5	E421/VA	1.0	µg/L	4.9	----	----	----	----
Antimony, dissolved	7440-36-0	E421/VA	0.10	µg/L	0.13	----	----	----	----
Arsenic, dissolved	7440-38-2	E421/VA	0.10	µg/L	0.44	----	----	----	----



Analytical Results

Sub-Matrix: Groundwater
 (Matrix: Water)

					Client sample ID	MW14-02	----	----	----	----
					Client sampling date / time	09-Jun-2025 11:10	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25B3738-001	----	----	----	----	----
					Result	----	----	----	----	----
Dissolved Metals										
Barium, dissolved	7440-39-3	E421/VA	0.10	µg/L	72.3	----	----	----	----	----
Beryllium, dissolved	7440-41-7	E421/VA	0.100	µg/L	<0.100	----	----	----	----	----
Bismuth, dissolved	7440-69-9	E421/VA	0.050	µg/L	<0.050	----	----	----	----	----
Boron, dissolved	7440-42-8	E421/VA	10	µg/L	949	----	----	----	----	----
Cadmium, dissolved	7440-43-9	E421/VA	0.0050	µg/L	0.144	----	----	----	----	----
Calcium, dissolved	7440-70-2	E421/VA	50	µg/L	93200	----	----	----	----	----
Cesium, dissolved	7440-46-2	E421/VA	0.010	µg/L	<0.010	----	----	----	----	----
Chromium, dissolved	7440-47-3	E421/VA	0.50	µg/L	<0.50	----	----	----	----	----
Cobalt, dissolved	7440-48-4	E421/VA	0.10	µg/L	6.18	----	----	----	----	----
Copper, dissolved	7440-50-8	E421/VA	0.20	µg/L	9.75	----	----	----	----	----
Iron, dissolved	7439-89-6	E421/VA	10	µg/L	<10	----	----	----	----	----
Lead, dissolved	7439-92-1	E421/VA	0.050	µg/L	<0.050	----	----	----	----	----
Lithium, dissolved	7439-93-2	E421/VA	1.0	µg/L	7.0	----	----	----	----	----
Magnesium, dissolved	7439-95-4	E421/VA	5.0	µg/L	15300	----	----	----	----	----
Manganese, dissolved	7439-96-5	E421/VA	0.10	µg/L	40.5	----	----	----	----	----
Mercury, dissolved	7439-97-6	E509/VA	0.0050	µg/L	<0.0050	----	----	----	----	----
Molybdenum, dissolved	7439-98-7	E421/VA	0.050	µg/L	4.58	----	----	----	----	----
Nickel, dissolved	7440-02-0	E421/VA	0.50	µg/L	5.30	----	----	----	----	----
Phosphorus, dissolved	7723-14-0	E421/VA	50	µg/L	<50	----	----	----	----	----
Potassium, dissolved	7440-09-7	E421/VA	50	µg/L	3030	----	----	----	----	----
Rubidium, dissolved	7440-17-7	E421/VA	0.20	µg/L	<0.20	----	----	----	----	----



Analytical Results

Sub-Matrix: Groundwater

(Matrix: Water)

					Client sample ID	MW14-02	----	----	----	----
					Client sampling date / time	09-Jun-2025 11:10	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25B3738-001	----	----	----	----	----
					Result	----	----	----	----	----
Dissolved Metals										
Selenium, dissolved	7782-49-2	E421/VA	0.050	µg/L	0.694	----	----	----	----	----
Silicon, dissolved	7440-21-3	E421/VA	50	µg/L	9680	----	----	----	----	----
Silver, dissolved	7440-22-4	E421/VA	0.010	µg/L	<0.010	----	----	----	----	----
Sodium, dissolved	7440-23-5	E421/VA	50	µg/L	40000	----	----	----	----	----
Strontium, dissolved	7440-24-6	E421/VA	0.20	µg/L	586	----	----	----	----	----
Sulfur, dissolved	7704-34-9	E421/VA	500	µg/L	17600	----	----	----	----	----
Tellurium, dissolved	13494-80-9	E421/VA	0.20	µg/L	<0.20	----	----	----	----	----
Thallium, dissolved	7440-28-0	E421/VA	0.010	µg/L	<0.010	----	----	----	----	----
Thorium, dissolved	7440-29-1	E421/VA	0.10	µg/L	<0.10	----	----	----	----	----
Tin, dissolved	7440-31-5	E421/VA	0.10	µg/L	0.37	----	----	----	----	----
Titanium, dissolved	7440-32-6	E421/VA	0.30	µg/L	<0.30	----	----	----	----	----
Tungsten, dissolved	7440-33-7	E421/VA	0.10	µg/L	<0.10	----	----	----	----	----
Uranium, dissolved	7440-61-1	E421/VA	0.010	µg/L	13.9	----	----	----	----	----
Vanadium, dissolved	7440-62-2	E421/VA	0.50	µg/L	0.63	----	----	----	----	----
Zinc, dissolved	7440-66-6	E421/VA	1.0	µg/L	11.6	----	----	----	----	----
Zirconium, dissolved	7440-67-7	E421/VA	0.20	µg/L	<0.20	----	----	----	----	----
Dissolved mercury filtration location	----	EP509/VA	-	-	Field	----	----	----	----	----
Dissolved metals filtration location	----	EP421/VA	-	-	Field	----	----	----	----	----

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA25B3738	Page	: 1 of 10
Client	: Masse Environmental Consultants Ltd.	Laboratory	: ALS Environmental - Vancouver
Contact	: Ico de Zwart	Account Manager	: Can Dang
Address	: 812 Vernon Street Nelson BC Canada V1L 4G4	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 2016-503-RDKS Ootischenia	Date Samples Received	: 10-Jun-2025 11:45
PO	: ----	Issue Date	: 18-Jun-2025 09:38
C-O-C number	: 22-20250609		
Sampler	: Chris Stephanou		
Site	: RDCK		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

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 : Analytical Method 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) MW14-02	E298	09-Jun-2025	11-Jun-2025	28 days	2 days	✓	15-Jun-2025	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE MW14-02	E235.Br-L	09-Jun-2025	12-Jun-2025	28 days	3 days	✓	12-Jun-2025	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW14-02	E235.Cl	09-Jun-2025	12-Jun-2025	28 days	3 days	✓	12-Jun-2025	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW14-02	E235.F	09-Jun-2025	12-Jun-2025	28 days	3 days	✓	12-Jun-2025	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE MW14-02	E235.NO3-L	09-Jun-2025	12-Jun-2025	3 days	3 days	✓	12-Jun-2025	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE MW14-02	E235.NO2-L	09-Jun-2025	12-Jun-2025	3 days	3 days	✓	12-Jun-2025	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW14-02	E235.SO4	09-Jun-2025	12-Jun-2025	28 days	3 days	✓	12-Jun-2025	28 days	3 days	✓



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

Analyte Group : Analytical Method 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 : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW14-02	E318	09-Jun-2025	11-Jun-2025	28 days	2 days	✓	13-Jun-2025	28 days	2 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) MW14-02	E509	09-Jun-2025	14-Jun-2025	28 days	5 days	✓	14-Jun-2025	28 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) MW14-02	E421	09-Jun-2025	13-Jun-2025	180 days	4 days	✓	13-Jun-2025	180 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) MW14-02	E355-L	09-Jun-2025	11-Jun-2025	28 days	2 days	✓	11-Jun-2025	28 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW14-02	E290	09-Jun-2025	12-Jun-2025	14 days	3 days	✓	12-Jun-2025	14 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE MW14-02	E100	09-Jun-2025	12-Jun-2025	28 days	3 days	✓	12-Jun-2025	28 days	3 days	✓
Physical Tests : pH by Meter										
HDPE MW14-02	E108	09-Jun-2025	12-Jun-2025	0.25 hrs	65 hrs	✗ EHTR-FM	12-Jun-2025	0.25 hrs	65 hrs	✗ EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE MW14-02	E162	09-Jun-2025	----	----	----		16-Jun-2025	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE MW14-02	E160	09-Jun-2025	----	----	----		16-Jun-2025	7 days	7 days	✓

[Legend & Qualifier Definitions](#)

Page : 5 of 10
Work Order : VA25B3738
Client : Masse Environmental Consultants Ltd.
Project : 2016-503-RDKS Ootischenia



EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended
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	Method	QC Lot #	Count		Frequency (%)		
Analytical Methods			QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Conductivity in Water	E100	2047221	1	19	5.2	5.0	✔
pH by Meter	E108	2047219	1	19	5.2	5.0	✔
TSS by Gravimetry	E160	2055228	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	2055241	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	2047224	1	19	5.2	5.0	✔
Chloride in Water by IC	E235.Cl	2047223	1	19	5.2	5.0	✔
Fluoride in Water by IC	E235.F	2047222	1	19	5.2	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	2047226	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	2047225	1	19	5.2	5.0	✔
Sulfate in Water by IC	E235.SO4	2047227	1	19	5.2	5.0	✔
Alkalinity Species by Titration	E290	2047220	1	19	5.2	5.0	✔
Ammonia by Fluorescence	E298	2044652	1	14	7.1	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	2044649	1	14	7.1	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	2044650	1	14	7.1	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	2048271	1	14	7.1	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	2052690	1	20	5.0	5.0	✔
Laboratory Control Samples (LCS)							
Conductivity in Water	E100	2047221	1	19	5.2	5.0	✔
pH by Meter	E108	2047219	1	19	5.2	5.0	✔
TSS by Gravimetry	E160	2055228	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	2055241	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	2047224	1	19	5.2	5.0	✔
Chloride in Water by IC	E235.Cl	2047223	1	19	5.2	5.0	✔
Fluoride in Water by IC	E235.F	2047222	1	19	5.2	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	2047226	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	2047225	1	19	5.2	5.0	✔
Sulfate in Water by IC	E235.SO4	2047227	1	19	5.2	5.0	✔
Alkalinity Species by Titration	E290	2047220	1	19	5.2	5.0	✔
Ammonia by Fluorescence	E298	2044652	1	14	7.1	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	2044649	1	14	7.1	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	2044650	1	14	7.1	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	2048271	1	14	7.1	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	2052690	1	20	5.0	5.0	✔
Method Blanks (MB)							
Conductivity in Water	E100	2047221	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
Method Blanks (MB) - Continued							
TSS by Gravimetry	E160	2055228	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	2055241	1	20	5.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	2047224	1	19	5.2	5.0	✔
Chloride in Water by IC	E235.Cl	2047223	1	19	5.2	5.0	✔
Fluoride in Water by IC	E235.F	2047222	1	19	5.2	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	2047226	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	2047225	1	19	5.2	5.0	✔
Sulfate in Water by IC	E235.SO4	2047227	1	19	5.2	5.0	✔
Alkalinity Species by Titration	E290	2047220	1	19	5.2	5.0	✔
Ammonia by Fluorescence	E298	2044652	1	14	7.1	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	2044649	1	14	7.1	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	2044650	1	14	7.1	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	2048271	1	14	7.1	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	2052690	1	20	5.0	5.0	✔
Matrix Spikes (MS)							
Bromide in Water by IC (Low Level)	E235.Br-L	2047224	1	19	5.2	5.0	✔
Chloride in Water by IC	E235.Cl	2047223	1	19	5.2	5.0	✔
Fluoride in Water by IC	E235.F	2047222	1	19	5.2	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	2047226	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	2047225	1	19	5.2	5.0	✔
Sulfate in Water by IC	E235.SO4	2047227	1	19	5.2	5.0	✔
Ammonia by Fluorescence	E298	2044652	1	14	7.1	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	2044649	1	14	7.1	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	2044650	1	14	7.1	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	2048271	1	14	7.1	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	2052690	1	20	5.0	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 ALS Environmental - Vancouver	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 ALS Environmental - Vancouver	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.
TSS by Gravimetry	E160 ALS Environmental - Vancouver	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.
TDS by Gravimetry	E162 ALS Environmental - Vancouver	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at $180 \pm 2^\circ\text{C}$ for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl ALS Environmental - Vancouver	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 ALS Environmental - Vancouver	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 ALS Environmental - Vancouver	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 ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Sulfate in Water by IC	E235.SO4 ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 ALS Environmental - Vancouver	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.
Ammonia by Fluorescence	E298 ALS Environmental - Vancouver	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 Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 ALS Environmental - Vancouver	Water	Method Fialab 100, 2018	TKN 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 ALS Environmental - Vancouver	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 carbonate-based Inorganic Carbon (IC). Analysis is by high temperature combustion with infrared detection of CO ₂ . Forms of carbon associated with inorganic or organic molecules (e.g. SCN and CN) are included in NPOC if they are not removed by purging under acidic conditions. Notably, NPOC excludes most volatile organic compounds and free cyanide. For samples where the majority of Total Carbon is inorganic, this method provides greater accuracy and reliability versus the TOC by subtraction method (TC minus TIC).
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Vancouver	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 Mercury in Water by CVAAS	E509 ALS Environmental - Vancouver	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.
Dissolved Hardness (Calculated)	EC100 ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO ₃), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO ₃ 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.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Vancouver	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>
Digestion for TKN in water	EP318 ALS Environmental - Vancouver	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 ALS Environmental - Vancouver	Water		Preparation for Total Organic Carbon by Combustion
Dissolved Metals Water Filtration	EP421 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO ₃ .
Dissolved Mercury Water Filtration	EP509 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

QUALITY CONTROL REPORT

Work Order	: VA25B3738	Page	: 1 of 13
Client	: Masse Environmental Consultants Ltd.	Laboratory	: ALS Environmental - Vancouver
Contact	: Ico de Zwart	Account Manager	: Can Dang
Address	: 812 Vernon Street Nelson BC Canada V1L 4G4	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 2016-503-RDKS Ootischenia	Date Samples Received	: 10-Jun-2025 11:45
PO	: ----	Date Analysis Commenced	: 11-Jun-2025
C-O-C number	: 22-20250609	Issue Date	: 18-Jun-2025 09:37
Sampler	: Chris Stephanou		
Site	: RDCK		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

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
Angelo Salandanan	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Lindsay Gung	Department Manager - Inorganics	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.



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: 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
Physical Tests (QC Lot: 2047219)											
KS2502186-001	Anonymous	pH	----	E108	0.10	pH units	8.33	8.35	0.240%	4%	----
Physical Tests (QC Lot: 2047220)											
KS2502186-001	Anonymous	Alkalinity, total (as CaCO ₃)	----	E290	1.0	mg/L	223	222	0.494%	20%	----
Physical Tests (QC Lot: 2047221)											
KS2502186-001	Anonymous	Conductivity	----	E100	2.0	µS/cm	1420	1440	0.978%	10%	----
Physical Tests (QC Lot: 2055228)											
KS2502186-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 2055241)											
KS2502186-001	Anonymous	Solids, total dissolved [TDS]	----	E162	20	mg/L	964	976	1.29%	20%	----
Anions and Nutrients (QC Lot: 2044649)											
FJ2501695-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.439	0.432	0.007	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2044652)											
FJ2501695-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0525	0.0523	0.375%	20%	----
Anions and Nutrients (QC Lot: 2047222)											
KS2502186-001	Anonymous	Fluoride	16984-48-8	E235.F	0.100	mg/L	0.265	0.258	0.007	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2047223)											
KS2502186-001	Anonymous	Chloride	16887-00-6	E235.Cl	2.50	mg/L	7.46	7.42	0.04	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2047224)											
KS2502186-001	Anonymous	Bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2047225)											
KS2502186-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	<0.0250	<0.0250	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2047226)											
KS2502186-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2047227)											
KS2502186-001	Anonymous	Sulfate (as SO ₄)	14808-79-8	E235.SO4	1.50	mg/L	577	579	0.254%	20%	----
Organic / Inorganic Carbon (QC Lot: 2044650)											
FJ2501695-001	Anonymous	Carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.89	2.01	0.12	Diff <2x LOR	----
Dissolved Metals (QC Lot: 2048271)											
VA25B3629-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0399	0.0414	3.68%	20%	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00044	0.00045	0.000010	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: 2048271) - continued											
VA25B3629-001	Anonymous	Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00041	0.00045	0.00003	Diff <2x LOR	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0382	0.0399	4.26%	20%	----
		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	<0.000050	<0.000050	0	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	0.0000736	0.0000729	0.888%	20%	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	26.1	26.2	0.692%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000015	0.000016	0.000001	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	0.00098	0.00101	0.00003	Diff <2x LOR	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	0.040	0.043	0.003	Diff <2x LOR	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000060	0.000062	0.000002	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	2.55	2.58	1.09%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00639	0.00640	0.164%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00130	0.00134	2.61%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00079	0.00077	0.00002	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	0.564	0.566	0.273%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00050	0.00053	0.00003	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000576	0.000618	6.96%	20%	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.15	1.19	3.59%	20%	----
		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	0.875	0.880	0.519%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.155	0.156	0.334%	20%	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	9.89	10.3	4.50%	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	<0.00010	<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	0.00058	0.00046	0.00012	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	0.000101	0.000106	4.42%	20%	----



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: 2048271) - continued											
VA25B3629-001	Anonymous	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	0.0037	0.0037	0.000003	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: 2052690)											
VA25B3698-002	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



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
Physical Tests (QCLot: 2047220)						
Alkalinity, total (as CaCO ₃)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 2047221)						
Conductivity	----	E100	1	µS/cm	1.2	----
Physical Tests (QCLot: 2055228)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 2055241)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 2044649)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 2044652)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 2047222)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 2047223)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 2047224)						
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 2047225)						
Nitrate (as N)	14797-55-8	E235.NO ₃ -L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 2047226)						
Nitrite (as N)	14797-65-0	E235.NO ₂ -L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 2047227)						
Sulfate (as SO ₄)	14808-79-8	E235.SO ₄	0.3	mg/L	<0.30	----
Organic / Inorganic Carbon (QCLot: 2044650)						
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Dissolved Metals (QCLot: 2048271)						
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	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 2048271) - continued						
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	----
Tin, dissolved	7440-31-5	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	----
Dissolved Metals (QCLot: 2052690)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----





Laboratory Control Sample (LCS) Report

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

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 2047219)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 2047220)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	104	85.0	115	----
Physical Tests (QCLot: 2047221)									
Conductivity	----	E100	1	µS/cm	147 µS/cm	100	90.0	110	----
Physical Tests (QCLot: 2055228)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	91.7	85.0	115	----
Physical Tests (QCLot: 2055241)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	93.4	85.0	115	----
Anions and Nutrients (QCLot: 2044649)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	99.4	75.0	125	----
Anions and Nutrients (QCLot: 2044652)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	98.0	85.0	115	----
Anions and Nutrients (QCLot: 2047222)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.3	90.0	110	----
Anions and Nutrients (QCLot: 2047223)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	98.8	90.0	110	----
Anions and Nutrients (QCLot: 2047224)									
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	97.7	85.0	115	----
Anions and Nutrients (QCLot: 2047225)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.7	90.0	110	----
Anions and Nutrients (QCLot: 2047226)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.4	90.0	110	----
Anions and Nutrients (QCLot: 2047227)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100.0	90.0	110	----
Organic / Inorganic Carbon (QCLot: 2044650)									
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	113	80.0	120	----
Dissolved Metals (QCLot: 2048271)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 2048271) - continued									
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	108	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	87.7	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.6	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	109	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	103	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	95.6	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	104	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	105	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	107	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	118	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	102	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	95.1	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	98.8	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	108	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	90.3	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	111	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	105	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	96.2	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.9	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	104	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	108	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----



Sub-Matrix: Water					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Target Concentration	LCS	Low	High	Qualifier
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 2048271) - continued									
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	108	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	99.1	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0 mg/L	95.7	80.0	120	----



Matrix Spike (MS) Report

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 >= 1x 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: 2044649)										
FJ2501695-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.47 mg/L	2.5 mg/L	99.0	70.0	130	----
Anions and Nutrients (QCLot: 2044652)										
FJ2501695-002	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0963 mg/L	0.1 mg/L	96.3	75.0	125	----
Anions and Nutrients (QCLot: 2047222)										
KS2502186-002	Anonymous	Fluoride	16984-48-8	E235.F	5.17 mg/L	5 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 2047223)										
KS2502186-002	Anonymous	Chloride	16887-00-6	E235.Cl	509 mg/L	500 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 2047224)										
KS2502186-002	Anonymous	Bromide	24959-67-9	E235.Br-L	2.59 mg/L	2.5 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 2047225)										
KS2502186-002	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	12.8 mg/L	12.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 2047226)										
KS2502186-002	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	2.55 mg/L	2.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 2047227)										
KS2502186-002	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	499 mg/L	500 mg/L	99.8	75.0	125	----
Organic / Inorganic Carbon (QCLot: 2044650)										
FJ2501695-002	Anonymous	Carbon, total organic [TOC]	----	E355-L	ND mg/L	----	ND	70.0	130	----
Dissolved Metals (QCLot: 2048271)										
VA25B3629-002	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.205 mg/L	0.2 mg/L	103	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		Barium, dissolved	7440-39-3	E421	ND mg/L	----	ND	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00831 mg/L	0.01 mg/L	83.1	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.097 mg/L	0.1 mg/L	97.1	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00391 mg/L	0.004 mg/L	97.7	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	----	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.0102 mg/L	0.01 mg/L	102	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0388 mg/L	0.04 mg/L	97.1	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0192 mg/L	0.02 mg/L	96.3	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		Iron, dissolved	7439-89-6	E421	1.90 mg/L	2 mg/L	95.2	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0192 mg/L	0.02 mg/L	95.9	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.100 mg/L	0.1 mg/L	100	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: 2048271) - continued										
VA25B3629-002	Anonymous	Magnesium, dissolved	7439-95-4	E421	ND mg/L	----	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	0.0190 mg/L	0.02 mg/L	95.3	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	0.0395 mg/L	0.04 mg/L	98.8	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	10.8 mg/L	10 mg/L	108	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	4.07 mg/L	4 mg/L	102	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0397 mg/L	0.04 mg/L	99.4	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	10.2 mg/L	10 mg/L	102	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00409 mg/L	0.004 mg/L	102	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	1.94 mg/L	2 mg/L	97.3	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	ND mg/L	----	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	20.6 mg/L	20 mg/L	103	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.0422 mg/L	0.04 mg/L	105	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00384 mg/L	0.004 mg/L	95.9	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0389 mg/L	0.04 mg/L	97.2	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.00402 mg/L	0.004 mg/L	101	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.0982 mg/L	0.1 mg/L	98.2	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.414 mg/L	0.4 mg/L	104	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
Dissolved Metals (QCLot: 2052690)										
VA25B3698-003	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000952 mg/L	0 mg/L	95.2	70.0	130	----



COC Number: 22 - 70750609

Page 1 of 1

Canada Toll Free: 1 800 668 9878

[illegible]

REFER TO BACK PAGE FOR ALL LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

* 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**.

FEB 2022 FROM

AM

CERTIFICATE OF ANALYSIS

Work Order	: VA25C8427	Laboratory	: ALS Environmental - Vancouver
Client	: Masse Environmental Consultants Ltd.	Account Manager	: Can Dang
Contact	: Ico de Zwart	Address	: 8081 Lougheed Highway
Address	: 812 Vernon Street		: Burnaby BC Canada V5A 1W9
	: Nelson British Columbia Canada V1L 4G4	E-mail	: Can.Dang@ALSGlobal.com
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 2016-503-RDKS Ootischenia	Date Samples Received	: 24-Oct-2025 12:00
PO	: ----	Date Analysis Commenced	: 25-Oct-2025
C-O-C number	: 22-20251023	Issue Date	: 03-Nov-2025 20:02
Sampler	: Chris Stephanou		
Site	: RDCK		
Quote number	: ----		
No. of samples received	: 8		
No. of samples analysed	: 8		

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>
Chau Tran	Analyst	Metals, Burnaby, British Columbia
Jaewook Lee	Lab Assistant	Metals, Burnaby, British Columbia
Monica Ko	Supervisor - Inorganic	Inorganics, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Organics, Burnaby, British Columbia
Ruth Wahyudi	Lab Assistant	Metals, Burnaby, British Columbia
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 units
mg/L	milligrams per litre
pH units	pH units
µg/L	micrograms per litre
µS/cm	microsiemens per centimetre

<: 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
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
RRV	Reported result verified by repeat analysis.



Analytical Results

Sub-Matrix: Groundwater
 (Matrix: Water)

					Client sample ID	MW1-95(E232086) ----	MW06-05(E253791) ----	MW07-05 (E335945) ----	MW14-01(E303871) ----	MW17-03(E309169) ----
Client sampling date / time						20-Oct-2025 10:01	21-Oct-2025 13:55	21-Oct-2025 13:15	21-Oct-2025 09:56	20-Oct-2025 11:46
Analyte	CAS Number	Method/Lab	LOR	Unit		VA25C8427-001	VA25C8427-002	VA25C8427-003	VA25C8427-004	VA25C8427-005
						ResultMU	ResultMU	ResultMU	ResultMU	ResultMU
Physical Tests										
Alkalinity, total (as CaCO ₃)	----	E290/VA	1.0	mg/L		157	222	341	262	140
Conductivity	----	E100/VA	2.0	µS/cm		399	560	776	590	401
Hardness (as CaCO ₃), dissolved	----	EC100/VA	0.60	mg/L		185	255	358	277	185
pH	----	E108/VA	0.10	pH units		7.94	7.84	7.52	7.92	7.97
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L		262	372	496	412	264
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L		40.2	6.2	7.6	74.4	77.0
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L		0.0080	0.0068	0.165	0.0111	<0.0050
Bromide	24959-67-9	E235.Br-L/VA	0.050	mg/L		<0.050	<0.050	<0.250 ^{DLDS}	<0.050	<0.050
Chloride	16887-00-6	E235.Cl/VA	0.50	mg/L		1.34	19.1	34.1	19.2	2.49
Fluoride	16984-48-8	E235.F/VA	0.020	mg/L		0.470	0.109	<0.100 ^{DLDS}	0.085	0.372
Kjeldahl nitrogen, total [TKN]	----	E318/VA	0.050	mg/L		0.061	0.117	0.638	0.137	0.091
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	0.0050	mg/L		0.0285	0.0060	0.503	<0.0050	<0.0050
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	0.0010	mg/L		<0.0010	0.0013	0.0451	<0.0010	<0.0010
Sulfate (as SO ₄)	14808-79-8	E235.SO4/VA	0.30	mg/L		55.7	52.5	40.6	35.4	65.9
Organic / Inorganic Carbon										
Carbon, total organic [TOC]	----	E355-L/VA	0.50	mg/L		7.33	1.97	6.29	23.5	12.9
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	1.0	µg/L		2.7	3.2	4.8	3.1	4.1
Antimony, dissolved	7440-36-0	E421/VA	0.10	µg/L		0.21	0.11	0.21	0.12	<0.10
Arsenic, dissolved	7440-38-2	E421/VA	0.10	µg/L		<0.10	0.19	0.25	1.34	0.29



Analytical Results

Sub-Matrix: Groundwater
 (Matrix: Water)

Sub-Matrix: Groundwater (Matrix: Water)					Client sample ID	MW1-95(E232086) ----	MW06-05(E253791) ----	MW07-05 (E335945) ----	MW14-01(E303871) ----	MW17-03(E309169) ----
Client sampling date / time					20-Oct-2025 10:01	21-Oct-2025 13:55	21-Oct-2025 13:15	21-Oct-2025 09:56	20-Oct-2025 11:46	
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25C8427-001	VA25C8427-002	VA25C8427-003	VA25C8427-004	VA25C8427-005	
					ResultMU	ResultMU	ResultMU	ResultMU	ResultMU	
Dissolved Metals										
Barium, dissolved	7440-39-3	E421/VA	0.10	µg/L	5.53	51.3	106	50.2	20.0	
Beryllium, dissolved	7440-41-7	E421/VA	0.100	µg/L	<0.100	<0.100	<0.100	<0.100	<0.100	
Bismuth, dissolved	7440-69-9	E421/VA	0.050	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
Boron, dissolved	7440-42-8	E421/VA	10	µg/L	12	11	77	15	<10	
Cadmium, dissolved	7440-43-9	E421/VA	0.0050	µg/L	0.0129	0.0319	1.21	<0.0050	0.0084	
Calcium, dissolved	7440-70-2	E421/VA	50	µg/L	61400	85100	115000	97100	55300	
Cesium, dissolved	7440-46-2	E421/VA	0.010	µg/L	0.090	<0.010	<0.010	<0.010	<0.010	
Chromium, dissolved	7440-47-3	E421/VA	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
Cobalt, dissolved	7440-48-4	E421/VA	0.10	µg/L	<0.10	0.15	3.03	0.31	<0.10	
Copper, dissolved	7440-50-8	E421/VA	0.20	µg/L	0.98	4.95	10.6	1.29	1.26	
Iron, dissolved	7439-89-6	E421/VA	10	µg/L	<10	16	28	229	<10	
Lead, dissolved	7439-92-1	E421/VA	0.050	µg/L	<0.050	<0.050	0.156	<0.050	<0.050	
Lithium, dissolved	7439-93-2	E421/VA	1.0	µg/L	5.1	5.3	8.0	8.0	5.3	
Magnesium, dissolved	7439-95-4	E421/VA	5.0	µg/L	7640	10400	17200	8400	11500	
Manganese, dissolved	7439-96-5	E421/VA	0.10	µg/L	0.78	9.58	1730	88.2	0.28	
Mercury, dissolved	7439-97-6	E509/VA	0.0050	µg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	
Molybdenum, dissolved	7439-98-7	E421/VA	0.050	µg/L	8.94	3.33	2.50	1.91	8.88	
Nickel, dissolved	7440-02-0	E421/VA	0.50	µg/L	<0.50	<0.50	6.95	0.84	<0.50	
Phosphorus, dissolved	7723-14-0	E421/VA	50	µg/L	<50	<50	<50	148	<50	
Potassium, dissolved	7440-09-7	E421/VA	50	µg/L	430	2580	3760	3760	1690	
Rubidium, dissolved	7440-17-7	E421/VA	0.20	µg/L	0.89	<0.20	0.50	1.53	0.84	



Analytical Results

Sub-Matrix: Groundwater
 (Matrix: Water)

Sub-Matrix: Groundwater (Matrix: Water)					Client sample ID	MW1-95(E232086) ----	MW06-05(E253791) ----	MW07-05 (E335945) ----	MW14-01(E303871) ----	MW17-03(E309169) ----
Client sampling date / time					20-Oct-2025 10:01	21-Oct-2025 13:55	21-Oct-2025 13:15	21-Oct-2025 09:56	20-Oct-2025 11:46	
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25C8427-001	VA25C8427-002	VA25C8427-003	VA25C8427-004	VA25C8427-005	
					ResultMU	ResultMU	ResultMU	ResultMU	ResultMU	
Dissolved Metals										
Selenium, dissolved	7782-49-2	E421/VA	0.050	µg/L	<0.050	0.137	0.238	<0.050	0.374	
Silicon, dissolved	7440-21-3	E421/VA	50	µg/L	11300	9550	11100	18600	8960	
Silver, dissolved	7440-22-4	E421/VA	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
Sodium, dissolved	7440-23-5	E421/VA	50	µg/L	6580	11500	20300	9350	6810	
Strontium, dissolved	7440-24-6	E421/VA	0.20	µg/L	634	451	584	541	346	
Sulfur, dissolved	7704-34-9	E421/VA	500	µg/L	19400	18100	14700	12400	23200	
Tellurium, dissolved	13494-80-9	E421/VA	0.20	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	
Thallium, dissolved	7440-28-0	E421/VA	0.010	µg/L	<0.010	<0.010	0.016	<0.010	<0.010	
Thorium, dissolved	7440-29-1	E421/VA	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10	
Tin, dissolved	7440-31-5	E421/VA	0.10	µg/L	0.18	0.27	0.48	0.15	0.13	
Titanium, dissolved	7440-32-6	E421/VA	0.30	µg/L	0.67	<0.30	<0.30	<0.30	0.35	
Tungsten, dissolved	7440-33-7	E421/VA	0.10	µg/L	1.82	<0.10	<0.10	0.17	0.32	
Uranium, dissolved	7440-61-1	E421/VA	0.010	µg/L	3.95	5.41	13.8	1.32	4.64	
Vanadium, dissolved	7440-62-2	E421/VA	0.50	µg/L	<0.50	0.70	0.78	0.97	0.78	
Zinc, dissolved	7440-66-6	E421/VA	1.0	µg/L	8.4	10.9	16.8	7.4	10.2	
Zirconium, dissolved	7440-67-7	E421/VA	0.20	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	
Dissolved mercury filtration location	----	EP509/VA	-	-	Field	Field	Field	Field	Field	
Dissolved metals filtration location	----	EP421/VA	-	-	Field	Field	Field	Field	Field	
Volatile Organic Compounds										
Chlorobenzene	108-90-7	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Chloromethane	74-87-3	E611C/VA	5.0	µg/L	----	<5.0	<5.0	----	----	



Analytical Results

Sub-Matrix: Groundwater
 (Matrix: Water)

Sub-Matrix: Groundwater (Matrix: Water)					Client sample ID	MW1-95(E232086) ----	MW06-05(E253791) ----	MW07-05 (E335945) ----	MW14-01(E303871) ----	MW17-03(E309169) ----
Client sampling date / time					20-Oct-2025 10:01	21-Oct-2025 13:55	21-Oct-2025 13:15	21-Oct-2025 09:56	20-Oct-2025 11:46	
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25C8427-001	VA25C8427-002	VA25C8427-003	VA25C8427-004	VA25C8427-005	
					ResultMU	ResultMU	ResultMU	ResultMU	ResultMU	
Volatile Organic Compounds										
Dichlorobenzene, 1,2-	95-50-1	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Dichlorobenzene, 1,3-	541-73-1	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Dichlorobenzene, 1,4-	106-46-7	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Dichloropropane, 1,2-	78-87-5	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Dichloropropylene, cis-1,3-	10061-01-5	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Dichloropropylene, cis+trans-1,3-	542-75-6	E611C/VA	0.75	µg/L	----	<0.75	<0.75	----	----	
Tetrachloroethane, 1,1,1,2-	630-20-6	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Tetrachloroethane, 1,1,2,2-	79-34-5	E611C/VA	0.20	µg/L	----	<0.20	<0.20	----	----	
Trichloroethane, 1,1,2-	79-00-5	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Trichlorofluoromethane	75-69-4	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Volatile Organic Compounds [Drycleaning]										
Carbon tetrachloride	56-23-5	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Chloroethane	75-00-3	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Dichloroethane, 1,1-	75-34-3	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Dichloroethane, 1,2-	107-06-2	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Dichloroethylene, 1,1-	75-35-4	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Dichloroethylene, cis-1,2-	156-59-2	E611C/VA	0.50	µg/L	----	<0.50	1.62	----	----	
Dichloroethylene, trans-1,2-	156-60-5	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Dichloromethane	75-09-2	E611C/VA	1.0	µg/L	----	<1.0	<1.0	----	----	
Dichloropropylene, trans-1,3-	10061-02-6	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Tetrachloroethylene	127-18-4	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	



Analytical Results

Sub-Matrix: Groundwater
 (Matrix: Water)

Sub-Matrix: Groundwater (Matrix: Water)					Client sample ID	MW1-95(E232086) ----	MW06-05(E253791) ----	MW07-05 (E335945) ----	MW14-01(E303871) ----	MW17-03(E309169) ----
Client sampling date / time					20-Oct-2025 10:01	21-Oct-2025 13:55	21-Oct-2025 13:15	21-Oct-2025 09:56	20-Oct-2025 11:46	
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25C8427-001	VA25C8427-002	VA25C8427-003	VA25C8427-004	VA25C8427-005	
					ResultMU	ResultMU	ResultMU	ResultMU	ResultMU	
Volatile Organic Compounds [Drycleaning]										
Trichloroethane, 1,1,1-	71-55-6	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Trichloroethylene	79-01-6	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Vinyl chloride	75-01-4	E611C/VA	0.40	µg/L	----	<0.40	0.58	----	----	
Volatile Organic Compounds [Fuels]										
Benzene	71-43-2	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Ethylbenzene	100-41-4	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Styrene	100-42-5	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Toluene	108-88-3	E611C/VA	0.40	µg/L	----	<0.40	<0.40	----	----	
Xylene, m+p-	179601-23-1	E611C/VA	0.40	µg/L	----	<0.40	<0.40	----	----	
Xylene, o-	95-47-6	E611C/VA	0.30	µg/L	----	<0.30	<0.30	----	----	
Xylenes, total	1330-20-7	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Volatile Organic Compounds [THMs]										
Bromodichloromethane	75-27-4	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Bromoform	75-25-2	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Chloroform	67-66-3	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Dibromochloromethane	124-48-1	E611C/VA	0.50	µg/L	----	<0.50	<0.50	----	----	
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611C/VA	1.0	%	----	89.7	84.7	----	----	
Difluorobenzene, 1,4-	540-36-3	E611C/VA	1.0	%	----	98.1	97.6	----	----	



Analytical Results

Sub-Matrix: Groundwater
 (Matrix: Water)

Sub-Matrix: Groundwater (Matrix: Water)					Client sample ID	MW1-95(E232086) ----	MW06-05(E253791) ----	MW07-05 (E335945) ----	MW14-01(E303871) ----	MW17-03(E309169) ----
Client sampling date / time					20-Oct-2025 10:01	21-Oct-2025 13:55	21-Oct-2025 13:15	21-Oct-2025 09:56	20-Oct-2025 11:46	
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25C8427-001	VA25C8427-002	VA25C8427-003	VA25C8427-004	VA25C8427-005	
					ResultMU	ResultMU	ResultMU	ResultMU	ResultMU	
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	83-32-9	E641A/VA	0.010	µg/L	----	----	<0.010	----	----	
Acenaphthylene	208-96-8	E641A/VA	0.010	µg/L	----	----	<0.010	----	----	
Acridine	260-94-6	E641A/VA	0.010	µg/L	----	----	<0.010	----	----	
Anthracene	120-12-7	E641A/VA	0.010	µg/L	----	----	<0.010	----	----	
Benz(a)anthracene	56-55-3	E641A/VA	0.010	µg/L	----	----	<0.010	----	----	
Benzo(a)pyrene	50-32-8	E641A/VA	0.0050	µg/L	----	----	<0.0050	----	----	
Benzo(b+j)fluoranthene	n/a	E641A/VA	0.010	µg/L	----	----	<0.010	----	----	
Benzo(b+j+k)fluoranthene	n/a	E641A/VA	0.015	µg/L	----	----	<0.015	----	----	
Benzo(g,h,i)perylene	191-24-2	E641A/VA	0.010	µg/L	----	----	<0.010	----	----	
Benzo(k)fluoranthene	207-08-9	E641A/VA	0.010	µg/L	----	----	<0.010	----	----	
Chrysene	218-01-9	E641A/VA	0.010	µg/L	----	----	<0.010	----	----	
Dibenz(a,h)anthracene	53-70-3	E641A/VA	0.0050	µg/L	----	----	<0.0050	----	----	
Fluoranthene	206-44-0	E641A/VA	0.010	µg/L	----	----	<0.010	----	----	
Fluorene	86-73-7	E641A/VA	0.010	µg/L	----	----	<0.010	----	----	
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A/VA	0.010	µg/L	----	----	<0.010	----	----	
Methylnaphthalene, 1-	90-12-0	E641A/VA	0.010	µg/L	----	----	<0.010	----	----	
Methylnaphthalene, 1+2-	----	E641A/VA	0.015	µg/L	----	----	<0.015	----	----	
Methylnaphthalene, 2-	91-57-6	E641A/VA	0.010	µg/L	----	----	<0.010	----	----	
Naphthalene	91-20-3	E641A/VA	0.050	µg/L	----	----	<0.050	----	----	
Phenanthrene	85-01-8	E641A/VA	0.020	µg/L	----	----	<0.020	----	----	
Pyrene	129-00-0	E641A/VA	0.010	µg/L	----	----	<0.010	----	----	



Analytical Results

Sub-Matrix: Groundwater
 (Matrix: Water)

					Client sample ID	MW1-95(E232086)	MW06-05(E253791)	MW07-05(E335945)	MW14-01(E303871)	MW17-03(E309169)
					Client sampling date / time	20-Oct-2025 10:01	21-Oct-2025 13:55	21-Oct-2025 13:15	21-Oct-2025 09:56	20-Oct-2025 11:46
Analyte	CAS Number	Method/Lab	LOR	Unit		VA25C8427-001	VA25C8427-002	VA25C8427-003	VA25C8427-004	VA25C8427-005
						ResultMU	ResultMU	ResultMU	ResultMU	ResultMU
Polycyclic Aromatic Hydrocarbons										
Quinoline	91-22-5	E641A/VA	0.050	µg/L		----	----	<0.050	----	----
B(a)P total potency equivalents [B(a)P TPE]	----	E641A/VA	0.010	µg/L		----	----	<0.010	----	----
PAHs, high molecular weight (BC AWQ)	n/a	E641A/VA	0.030	µg/L		----	----	<0.030	----	----
PAHs, low molecular weight (BC AWQ)	n/a	E641A/VA	0.060	µg/L		----	----	<0.060	----	----
PAHs, total (CCME sewer 18)	n/a	E641A/VA	0.070	µg/L		----	----	<0.070	----	----
PAHs, total (EPA 16)	n/a	E641A/VA	0.065	µg/L		----	----	<0.065	----	----
Polycyclic Aromatic Hydrocarbons Surrogates										
Chrysene-d12	1719-03-5	E641A/VA	0.1	%		----	----	93.9	----	----
Naphthalene-d8	1146-65-2	E641A/VA	0.1	%		----	----	90.8	----	----
Phenanthrene-d10	1517-22-2	E641A/VA	0.1	%		----	----	99.7	----	----

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

Analytical Results

Sub-Matrix: Groundwater
 (Matrix: Water)

					Client sample ID	MW20-1(E323191)	Duplicate	Field Blank	----	----
					Client sampling date / time	21-Oct-2025 17:15	21-Oct-2025 13:55	21-Oct-2025 15:55	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		VA25C8427-006	VA25C8427-007	VA25C8427-008	----	----
						ResultMU	ResultMU	ResultMU	----	----
Physical Tests										
Alkalinity, total (as CaCO ₃)	----	E290/VA	1.0	mg/L		219	222	<1.0	----	----
Conductivity	----	E100/VA	2.0	µS/cm		490	561	2.0	----	----
Hardness (as CaCO ₃), dissolved	----	EC100/VA	0.60	mg/L		231	261	0.66	----	----
pH	----	E108/VA	0.10	pH units		7.81	7.87	5.86	----	----



Analytical Results

Sub-Matrix: Groundwater

(Matrix: Water)

					Client sample ID	MW20-1(E323191)	Duplicate	Field Blank	----	----
					Client sampling date / time	21-Oct-2025 17:15	21-Oct-2025 13:55	21-Oct-2025 15:55	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25C8427-006	VA25C8427-007	VA25C8427-008	----	----	----
					ResultMU	ResultMU	ResultMU	----	----	----
Physical Tests										
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L	314	360	<10	----	----	----
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L	19.6	6.2	<3.0	----	----	----
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L	<0.0050	0.0059	0.0165 ^{RRV}	----	----	----
Bromide	24959-67-9	E235.Br-L/VA	0.050	mg/L	<0.050	<0.050	<0.050	----	----	----
Chloride	16887-00-6	E235.Cl/VA	0.50	mg/L	12.8	19.1	<0.50	----	----	----
Fluoride	16984-48-8	E235.F/VA	0.020	mg/L	0.107	0.104	<0.020	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318/VA	0.050	mg/L	0.157	0.086	<0.050	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	0.0050	mg/L	0.0336	0.0084	<0.0050	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	0.0010	mg/L	0.0026	0.0013	<0.0010	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	0.30	mg/L	28.1	52.3	<0.30	----	----	----
Organic / Inorganic Carbon										
Carbon, total organic [TOC]	----	E355-L/VA	0.50	mg/L	6.39	1.11	<0.50	----	----	----
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	1.0	µg/L	4.0	1.7	<1.0	----	----	----
Antimony, dissolved	7440-36-0	E421/VA	0.10	µg/L	0.12	<0.10	<0.10	----	----	----
Arsenic, dissolved	7440-38-2	E421/VA	0.10	µg/L	0.23	0.20	<0.10	----	----	----
Barium, dissolved	7440-39-3	E421/VA	0.10	µg/L	95.8	52.1	0.31 ^{RRV}	----	----	----
Beryllium, dissolved	7440-41-7	E421/VA	0.100	µg/L	<0.100	<0.100	<0.100	----	----	----
Bismuth, dissolved	7440-69-9	E421/VA	0.050	µg/L	<0.050	<0.050	<0.050	----	----	----
Boron, dissolved	7440-42-8	E421/VA	10	µg/L	49	<10	<10	----	----	----



Analytical Results

Sub-Matrix: Groundwater
 (Matrix: Water)

					Client sample ID	MW20-1(E323191)	Duplicate	Field Blank	----	----
					Client sampling date / time	21-Oct-2025 17:15	21-Oct-2025 13:55	21-Oct-2025 15:55	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25C8427-006	VA25C8427-007	VA25C8427-008	----	----	----
					ResultMU	ResultMU	ResultMU	----	----	----
Dissolved Metals										
Cadmium, dissolved	7440-43-9	E421/VA	0.0050	µg/L	0.101	0.0313	<0.0050	----	----	----
Calcium, dissolved	7440-70-2	E421/VA	50	µg/L	71900	87100	208 ^{RRV}	----	----	----
Cesium, dissolved	7440-46-2	E421/VA	0.010	µg/L	<0.010	<0.010	<0.010	----	----	----
Chromium, dissolved	7440-47-3	E421/VA	0.50	µg/L	<0.50	<0.50	<0.50	----	----	----
Cobalt, dissolved	7440-48-4	E421/VA	0.10	µg/L	0.49	0.10	<0.10	----	----	----
Copper, dissolved	7440-50-8	E421/VA	0.20	µg/L	6.26	2.40	0.24 ^{RRV}	----	----	----
Iron, dissolved	7439-89-6	E421/VA	10	µg/L	<10	11	<10	----	----	----
Lead, dissolved	7439-92-1	E421/VA	0.050	µg/L	<0.050	<0.050	<0.050	----	----	----
Lithium, dissolved	7439-93-2	E421/VA	1.0	µg/L	9.4	5.1	<1.0	----	----	----
Magnesium, dissolved	7439-95-4	E421/VA	5.0	µg/L	12600	10500	35.1 ^{RRV}	----	----	----
Manganese, dissolved	7439-96-5	E421/VA	0.10	µg/L	32.8	6.25	0.32 ^{RRV}	----	----	----
Mercury, dissolved	7439-97-6	E509/VA	0.0050	µg/L	<0.0050	<0.0050	<0.0050	----	----	----
Molybdenum, dissolved	7439-98-7	E421/VA	0.050	µg/L	1.85	3.28	<0.050	----	----	----
Nickel, dissolved	7440-02-0	E421/VA	0.50	µg/L	3.02	<0.50	<0.50	----	----	----
Phosphorus, dissolved	7723-14-0	E421/VA	50	µg/L	<50	<50	<50	----	----	----
Potassium, dissolved	7440-09-7	E421/VA	50	µg/L	2770	2540	<50	----	----	----
Rubidium, dissolved	7440-17-7	E421/VA	0.20	µg/L	<0.20	<0.20	<0.20	----	----	----
Selenium, dissolved	7782-49-2	E421/VA	0.050	µg/L	0.165	0.193	<0.050	----	----	----
Silicon, dissolved	7440-21-3	E421/VA	50	µg/L	11800	9600	82 ^{RRV}	----	----	----
Silver, dissolved	7440-22-4	E421/VA	0.010	µg/L	<0.010	<0.010	<0.010	----	----	----
Sodium, dissolved	7440-23-5	E421/VA	50	µg/L	7770	11100	151 ^{RRV}	----	----	----



Analytical Results

Sub-Matrix: Groundwater

(Matrix: Water)

					Client sample ID	MW20-1(E323191)	Duplicate	Field Blank	----	----
					Client sampling date / time	21-Oct-2025 17:15	21-Oct-2025 13:55	21-Oct-2025 15:55	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25C8427-006	VA25C8427-007	VA25C8427-008	----	----	----
					ResultMU	ResultMU	ResultMU	----	----	----
Dissolved Metals										
Strontium, dissolved	7440-24-6	E421/VA	0.20	µg/L	470	478	1.41 ^{RRV}	----	----	----
Sulfur, dissolved	7704-34-9	E421/VA	500	µg/L	9880	17900	<500	----	----	----
Tellurium, dissolved	13494-80-9	E421/VA	0.20	µg/L	<0.20	<0.20	<0.20	----	----	----
Thallium, dissolved	7440-28-0	E421/VA	0.010	µg/L	<0.010	<0.010	<0.010	----	----	----
Thorium, dissolved	7440-29-1	E421/VA	0.10	µg/L	<0.10	<0.10	<0.10	----	----	----
Tin, dissolved	7440-31-5	E421/VA	0.10	µg/L	0.53	0.14	<0.10	----	----	----
Titanium, dissolved	7440-32-6	E421/VA	0.30	µg/L	<0.30	<0.30	<0.30	----	----	----
Tungsten, dissolved	7440-33-7	E421/VA	0.10	µg/L	<0.10	<0.10	<0.10	----	----	----
Uranium, dissolved	7440-61-1	E421/VA	0.010	µg/L	4.76	5.56	<0.010	----	----	----
Vanadium, dissolved	7440-62-2	E421/VA	0.50	µg/L	1.17	0.79	<0.50	----	----	----
Zinc, dissolved	7440-66-6	E421/VA	1.0	µg/L	6.1	7.8	<1.0	----	----	----
Zirconium, dissolved	7440-67-7	E421/VA	0.20	µg/L	<0.20	<0.20	<0.20	----	----	----
Dissolved mercury filtration location	----	EP509/VA	-	-	Field	Field	Field	----	----	----
Dissolved metals filtration location	----	EP421/VA	-	-	Field	Field	Field	----	----	----

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA25C8427	Page	: 1 of 22
Client	: Masse Environmental Consultants Ltd.	Laboratory	: ALS Environmental - Vancouver
Contact	: Ico de Zwart	Account Manager	: Can Dang
Address	: 812 Vernon Street Nelson BC Canada V1L 4G4	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 2016-503-RDKS Ootischenia	Date Samples Received	: 24-Oct-2025 12:00
PO	: ----	Issue Date	: 03-Nov-2025 20:01
C-O-C number	: 22-20251023		
Sampler	: Chris Stephanou		
Site	: RDCK		
Quote number	: ----		
No. of samples received	: 8		
No. of samples analysed	: 8		

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 : Analytical Method 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) Duplicate	E298	21-Oct-2025	26-Oct-2025	28 days	5 days	✓	30-Oct-2025	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Field Blank	E298	21-Oct-2025	26-Oct-2025	28 days	5 days	✓	31-Oct-2025	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW06-05(E253791)	E298	21-Oct-2025	26-Oct-2025	28 days	5 days	✓	30-Oct-2025	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW07-05(E335945)	E298	21-Oct-2025	26-Oct-2025	28 days	5 days	✓	30-Oct-2025	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW14-01(E303871)	E298	21-Oct-2025	26-Oct-2025	28 days	5 days	✓	30-Oct-2025	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW20-1(E323191)	E298	21-Oct-2025	26-Oct-2025	28 days	5 days	✓	30-Oct-2025	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW17-03(E309169)	E298	20-Oct-2025	26-Oct-2025	28 days	6 days	✓	30-Oct-2025	28 days	6 days	✓



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

Analyte Group : Analytical Method	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	
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW1-95(E232086)	E298	20-Oct-2025	26-Oct-2025	28 days	6 days	✓	30-Oct-2025	28 days	6 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE Duplicate	E235.Br-L	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	26-Oct-2025	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE Field Blank	E235.Br-L	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	26-Oct-2025	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE MW06-05(E253791)	E235.Br-L	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	26-Oct-2025	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE MW07-05(E335945)	E235.Br-L	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	26-Oct-2025	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE MW14-01(E303871)	E235.Br-L	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	26-Oct-2025	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE MW20-1(E323191)	E235.Br-L	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	26-Oct-2025	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE MW17-03(E309169)	E235.Br-L	20-Oct-2025	25-Oct-2025	28 days	5 days	✓	26-Oct-2025	28 days	5 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE MW1-95(E232086)	E235.Br-L	20-Oct-2025	25-Oct-2025	28 days	5 days	✓	26-Oct-2025	28 days	5 days	✓



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

Analyte Group : Analytical Method 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 Duplicate	E235.Cl	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	26-Oct-2025	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Field Blank	E235.Cl	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	26-Oct-2025	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW06-05(E253791)	E235.Cl	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	26-Oct-2025	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW07-05(E335945)	E235.Cl	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	26-Oct-2025	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW14-01(E303871)	E235.Cl	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	26-Oct-2025	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW20-1(E323191)	E235.Cl	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	26-Oct-2025	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW17-03(E309169)	E235.Cl	20-Oct-2025	25-Oct-2025	28 days	5 days	✓	26-Oct-2025	28 days	5 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW1-95(E232086)	E235.Cl	20-Oct-2025	25-Oct-2025	28 days	5 days	✓	26-Oct-2025	28 days	5 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Duplicate	E235.F	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	26-Oct-2025	28 days	4 days	✓



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

Analyte Group : Analytical Method	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 Field Blank	E235.F	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	26-Oct-2025	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW06-05(E253791)	E235.F	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	26-Oct-2025	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW07-05(E335945)	E235.F	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	26-Oct-2025	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW14-01(E303871)	E235.F	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	26-Oct-2025	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW20-1(E323191)	E235.F	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	26-Oct-2025	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW17-03(E309169)	E235.F	20-Oct-2025	25-Oct-2025	28 days	5 days	✓	26-Oct-2025	28 days	5 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW1-95(E232086)	E235.F	20-Oct-2025	25-Oct-2025	28 days	5 days	✓	26-Oct-2025	28 days	5 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Duplicate	E235.NO3-L	21-Oct-2025	25-Oct-2025	3 days	3 days	✓	26-Oct-2025	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Field Blank	E235.NO3-L	21-Oct-2025	25-Oct-2025	3 days	3 days	✓	26-Oct-2025	3 days	3 days	✓



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

Analyte Group : Analytical Method	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		
Anions and Nutrients : Nitrate in Water by IC (Low Level)											
HDPE MW06-05(E253791)	E235.NO3-L	21-Oct-2025	25-Oct-2025	3 days	3 days	✓	26-Oct-2025	3 days	3 days	✓	
Anions and Nutrients : Nitrate in Water by IC (Low Level)											
HDPE MW20-1(E323191)	E235.NO3-L	21-Oct-2025	25-Oct-2025	3 days	3 days	✓	26-Oct-2025	3 days	3 days	✓	
Anions and Nutrients : Nitrate in Water by IC (Low Level)											
HDPE MW07-05(E335945)	E235.NO3-L	21-Oct-2025	25-Oct-2025	3 days	4 days	✖ EHTL	26-Oct-2025	3 days	4 days	✖ EHTL	
Anions and Nutrients : Nitrate in Water by IC (Low Level)											
HDPE MW14-01(E303871)	E235.NO3-L	21-Oct-2025	25-Oct-2025	3 days	4 days	✖ EHTL	26-Oct-2025	3 days	4 days	✖ EHTL	
Anions and Nutrients : Nitrate in Water by IC (Low Level)											
HDPE MW17-03(E309169)	E235.NO3-L	20-Oct-2025	25-Oct-2025	3 days	5 days	✖ EHTR	26-Oct-2025	3 days	5 days	✖ EHTR	
Anions and Nutrients : Nitrate in Water by IC (Low Level)											
HDPE MW1-95(E232086)	E235.NO3-L	20-Oct-2025	25-Oct-2025	3 days	5 days	✖ EHTR	26-Oct-2025	3 days	5 days	✖ EHTR	
Anions and Nutrients : Nitrite in Water by IC (Low Level)											
HDPE Duplicate	E235.NO2-L	21-Oct-2025	25-Oct-2025	3 days	3 days	✓	26-Oct-2025	3 days	3 days	✓	
Anions and Nutrients : Nitrite in Water by IC (Low Level)											
HDPE Field Blank	E235.NO2-L	21-Oct-2025	25-Oct-2025	3 days	3 days	✓	26-Oct-2025	3 days	3 days	✓	
Anions and Nutrients : Nitrite in Water by IC (Low Level)											
HDPE MW06-05(E253791)	E235.NO2-L	21-Oct-2025	25-Oct-2025	3 days	3 days	✓	26-Oct-2025	3 days	3 days	✓	



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

Analyte Group : Analytical Method	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	
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE MW20-1(E323191)	E235.NO2-L	21-Oct-2025	25-Oct-2025	3 days	3 days	✓	26-Oct-2025	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE MW07-05(E335945)	E235.NO2-L	21-Oct-2025	25-Oct-2025	3 days	4 days	✖ EHTL	26-Oct-2025	3 days	4 days	✖ EHTL
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE MW14-01(E303871)	E235.NO2-L	21-Oct-2025	25-Oct-2025	3 days	4 days	✖ EHTL	26-Oct-2025	3 days	4 days	✖ EHTL
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE MW17-03(E309169)	E235.NO2-L	20-Oct-2025	25-Oct-2025	3 days	5 days	✖ EHTR	26-Oct-2025	3 days	5 days	✖ EHTR
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE MW1-95(E232086)	E235.NO2-L	20-Oct-2025	25-Oct-2025	3 days	5 days	✖ EHTR	26-Oct-2025	3 days	5 days	✖ EHTR
Anions and Nutrients : Sulfate in Water by IC										
HDPE Duplicate	E235.SO4	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	26-Oct-2025	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Field Blank	E235.SO4	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	26-Oct-2025	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW06-05(E253791)	E235.SO4	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	26-Oct-2025	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW07-05(E335945)	E235.SO4	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	26-Oct-2025	28 days	4 days	✓



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

Analyte Group : Analytical Method	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	
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW14-01(E303871)	E235.SO4	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	26-Oct-2025	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW20-1(E323191)	E235.SO4	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	26-Oct-2025	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW17-03(E309169)	E235.SO4	20-Oct-2025	25-Oct-2025	28 days	5 days	✓	26-Oct-2025	28 days	5 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW1-95(E232086)	E235.SO4	20-Oct-2025	25-Oct-2025	28 days	5 days	✓	26-Oct-2025	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) Duplicate	E318	21-Oct-2025	26-Oct-2025	28 days	5 days	✓	29-Oct-2025	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) Field Blank	E318	21-Oct-2025	26-Oct-2025	28 days	5 days	✓	29-Oct-2025	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW06-05(E253791)	E318	21-Oct-2025	26-Oct-2025	28 days	5 days	✓	29-Oct-2025	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW07-05(E335945)	E318	21-Oct-2025	26-Oct-2025	28 days	5 days	✓	29-Oct-2025	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW14-01(E303871)	E318	21-Oct-2025	26-Oct-2025	28 days	5 days	✓	29-Oct-2025	28 days	5 days	✓



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

Analyte Group : Analytical Method	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	
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW20-1(E323191)	E318	21-Oct-2025	26-Oct-2025	28 days	5 days	✓	29-Oct-2025	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW17-03(E309169)	E318	20-Oct-2025	26-Oct-2025	28 days	6 days	✓	29-Oct-2025	28 days	6 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW1-95(E232086)	E318	20-Oct-2025	26-Oct-2025	28 days	6 days	✓	29-Oct-2025	28 days	6 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) Duplicate	E509	21-Oct-2025	31-Oct-2025	28 days	10 days	✓	31-Oct-2025	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) Field Blank	E509	21-Oct-2025	31-Oct-2025	28 days	10 days	✓	31-Oct-2025	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) MW06-05(E253791)	E509	21-Oct-2025	31-Oct-2025	28 days	10 days	✓	31-Oct-2025	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) MW07-05(E335945)	E509	21-Oct-2025	31-Oct-2025	28 days	10 days	✓	31-Oct-2025	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) MW14-01(E303871)	E509	21-Oct-2025	31-Oct-2025	28 days	10 days	✓	31-Oct-2025	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) MW20-1(E323191)	E509	21-Oct-2025	31-Oct-2025	28 days	10 days	✓	31-Oct-2025	28 days	10 days	✓



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

Analyte Group : Analytical Method	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 Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) MW17-03(E309169)	E509	20-Oct-2025	31-Oct-2025	28 days	11 days	✓	31-Oct-2025	28 days	11 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) MW1-95(E232086)	E509	20-Oct-2025	31-Oct-2025	28 days	11 days	✓	31-Oct-2025	28 days	11 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) MW17-03(E309169)	E421	20-Oct-2025	30-Oct-2025	180 days	10 days	✓	30-Oct-2025	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) MW1-95(E232086)	E421	20-Oct-2025	30-Oct-2025	180 days	10 days	✓	30-Oct-2025	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Duplicate	E421	21-Oct-2025	30-Oct-2025	180 days	9 days	✓	30-Oct-2025	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Field Blank	E421	21-Oct-2025	30-Oct-2025	180 days	9 days	✓	30-Oct-2025	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) MW06-05(E253791)	E421	21-Oct-2025	30-Oct-2025	180 days	9 days	✓	30-Oct-2025	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) MW07-05(E335945)	E421	21-Oct-2025	30-Oct-2025	180 days	9 days	✓	30-Oct-2025	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) MW14-01(E303871)	E421	21-Oct-2025	30-Oct-2025	180 days	9 days	✓	30-Oct-2025	180 days	9 days	✓



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

Analyte Group : Analytical Method	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 (lab preserved) MW20-1(E323191)	E421	21-Oct-2025	30-Oct-2025	180 days	9 days	✓	30-Oct-2025	180 days	9 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) Duplicate	E355-L	21-Oct-2025	26-Oct-2025	28 days	5 days	✓	27-Oct-2025	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) Field Blank	E355-L	21-Oct-2025	26-Oct-2025	28 days	5 days	✓	27-Oct-2025	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) MW06-05(E253791)	E355-L	21-Oct-2025	26-Oct-2025	28 days	5 days	✓	27-Oct-2025	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) MW07-05(E335945)	E355-L	21-Oct-2025	26-Oct-2025	28 days	5 days	✓	27-Oct-2025	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) MW14-01(E303871)	E355-L	21-Oct-2025	26-Oct-2025	28 days	5 days	✓	27-Oct-2025	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) MW20-1(E323191)	E355-L	21-Oct-2025	26-Oct-2025	28 days	5 days	✓	27-Oct-2025	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) MW17-03(E309169)	E355-L	20-Oct-2025	26-Oct-2025	28 days	6 days	✓	27-Oct-2025	28 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) MW1-95(E232086)	E355-L	20-Oct-2025	26-Oct-2025	28 days	6 days	✓	27-Oct-2025	28 days	6 days	✓



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

Analyte Group : Analytical Method	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 Duplicate	E290	21-Oct-2025	25-Oct-2025	14 days	4 days	✓	25-Oct-2025	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Field Blank	E290	21-Oct-2025	25-Oct-2025	14 days	4 days	✓	25-Oct-2025	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW06-05(E253791)	E290	21-Oct-2025	25-Oct-2025	14 days	4 days	✓	25-Oct-2025	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW07-05(E335945)	E290	21-Oct-2025	25-Oct-2025	14 days	4 days	✓	25-Oct-2025	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW14-01(E303871)	E290	21-Oct-2025	25-Oct-2025	14 days	4 days	✓	25-Oct-2025	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW20-1(E323191)	E290	21-Oct-2025	25-Oct-2025	14 days	4 days	✓	25-Oct-2025	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW17-03(E309169)	E290	20-Oct-2025	25-Oct-2025	14 days	5 days	✓	25-Oct-2025	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW1-95(E232086)	E290	20-Oct-2025	25-Oct-2025	14 days	5 days	✓	25-Oct-2025	14 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE Duplicate	E100	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	25-Oct-2025	28 days	4 days	✓



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Analyte Group : Analytical Method	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	
Physical Tests : Conductivity in Water										
HDPE Field Blank	E100	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	25-Oct-2025	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE MW06-05(E253791)	E100	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	25-Oct-2025	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE MW07-05(E335945)	E100	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	25-Oct-2025	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE MW14-01(E303871)	E100	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	25-Oct-2025	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE MW20-1(E323191)	E100	21-Oct-2025	25-Oct-2025	28 days	4 days	✓	25-Oct-2025	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE MW17-03(E309169)	E100	20-Oct-2025	25-Oct-2025	28 days	5 days	✓	25-Oct-2025	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE MW1-95(E232086)	E100	20-Oct-2025	25-Oct-2025	28 days	5 days	✓	25-Oct-2025	28 days	5 days	✓
Physical Tests : pH by Meter										
HDPE MW14-01(E303871)	E108	21-Oct-2025	25-Oct-2025	0.25 hrs	100 hrs	✖ EHTR-FM	25-Oct-2025	0.25 hrs	100 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE MW17-03(E309169)	E108	20-Oct-2025	25-Oct-2025	0.25 hrs	122 hrs	✖ EHTR-FM	25-Oct-2025	0.25 hrs	122 hrs	✖ EHTR-FM



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

Analyte Group : Analytical Method	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	
Physical Tests : pH by Meter										
HDPE MW1-95(E232086)	E108	20-Oct-2025	25-Oct-2025	0.25 hrs	124 hrs	* EHTR-FM	25-Oct-2025	0.25 hrs	124 hrs	* EHTR-FM
Physical Tests : pH by Meter										
HDPE MW20-1(E323191)	E108	21-Oct-2025	25-Oct-2025	0.25 hrs	92 hrs	* EHTR-FM	25-Oct-2025	0.25 hrs	92 hrs	* EHTR-FM
Physical Tests : pH by Meter										
HDPE Field Blank	E108	21-Oct-2025	25-Oct-2025	0.25 hrs	94 hrs	* EHTR-FM	25-Oct-2025	0.25 hrs	94 hrs	* EHTR-FM
Physical Tests : pH by Meter										
HDPE Duplicate	E108	21-Oct-2025	25-Oct-2025	0.25 hrs	96 hrs	* EHTR-FM	25-Oct-2025	0.25 hrs	96 hrs	* EHTR-FM
Physical Tests : pH by Meter										
HDPE MW06-05(E253791)	E108	21-Oct-2025	25-Oct-2025	0.25 hrs	96 hrs	* EHTR-FM	25-Oct-2025	0.25 hrs	96 hrs	* EHTR-FM
Physical Tests : pH by Meter										
HDPE MW07-05(E335945)	E108	21-Oct-2025	25-Oct-2025	0.25 hrs	96 hrs	* EHTR-FM	25-Oct-2025	0.25 hrs	96 hrs	* EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE Duplicate	E162	21-Oct-2025	----	----	----		27-Oct-2025	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE Field Blank	E162	21-Oct-2025	----	----	----		27-Oct-2025	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE MW06-05(E253791)	E162	21-Oct-2025	----	----	----		27-Oct-2025	7 days	6 days	✓



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

Analyte Group : Analytical Method	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : TDS by Gravimetry										
HDPE MW07-05(E335945)	E162	21-Oct-2025	----	----	----		27-Oct-2025	7 days	6 days	✔
Physical Tests : TDS by Gravimetry										
HDPE MW14-01(E303871)	E162	21-Oct-2025	----	----	----		27-Oct-2025	7 days	6 days	✔
Physical Tests : TDS by Gravimetry										
HDPE MW20-1(E323191)	E162	21-Oct-2025	----	----	----		27-Oct-2025	7 days	6 days	✔
Physical Tests : TDS by Gravimetry										
HDPE MW17-03(E309169)	E162	20-Oct-2025	----	----	----		27-Oct-2025	7 days	7 days	✔
Physical Tests : TDS by Gravimetry										
HDPE MW1-95(E232086)	E162	20-Oct-2025	----	----	----		27-Oct-2025	7 days	7 days	✔
Physical Tests : TSS by Gravimetry										
HDPE Duplicate	E160	21-Oct-2025	----	----	----		27-Oct-2025	7 days	6 days	✔
Physical Tests : TSS by Gravimetry										
HDPE Field Blank	E160	21-Oct-2025	----	----	----		27-Oct-2025	7 days	6 days	✔
Physical Tests : TSS by Gravimetry										
HDPE MW06-05(E253791)	E160	21-Oct-2025	----	----	----		27-Oct-2025	7 days	6 days	✔
Physical Tests : TSS by Gravimetry										
HDPE MW07-05(E335945)	E160	21-Oct-2025	----	----	----		27-Oct-2025	7 days	6 days	✔



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

Analyte Group : Analytical Method 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 MW14-01(E303871)	E160	21-Oct-2025	----	----	----		27-Oct-2025	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE MW20-1(E323191)	E160	21-Oct-2025	----	----	----		27-Oct-2025	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE MW17-03(E309169)	E160	20-Oct-2025	----	----	----		27-Oct-2025	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE MW1-95(E232086)	E160	20-Oct-2025	----	----	----		27-Oct-2025	7 days	7 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs in Water by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate) MW07-05(E335945)	E641A	21-Oct-2025	26-Oct-2025	14 days	5 days	✓	28-Oct-2025	40 days	2 days	✓
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-05(E253791)	E611C	21-Oct-2025	26-Oct-2025	14 days	5 days	✓	28-Oct-2025	14 days	5 days	✓
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW07-05(E335945)	E611C	21-Oct-2025	26-Oct-2025	14 days	5 days	✓	28-Oct-2025	14 days	5 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.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

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	Method	QC Lot #	Count		Frequency (%)		
Analytical Methods			QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Conductivity in Water	E100	2299272	1	20	5.0	5.0	✔
pH by Meter	E108	2299271	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	2301157	1	18	5.5	5.0	✔
TDS by Gravimetry	E162	2301175	1	19	5.2	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	2299276	1	20	5.0	5.0	✔
Chloride in Water by IC	E235.Cl	2299275	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	2299274	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	2299278	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	2299277	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	2299279	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	2299273	1	17	5.8	5.0	✔
Ammonia by Fluorescence	E298	2299815	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	2299813	1	9	11.1	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	2299814	1	9	11.1	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	2301873	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	2312206	2	40	5.0	5.0	✔
VOCs (BC List) by Headspace GC-MS	E611C	2299853	1	16	6.2	5.0	✔
Laboratory Control Samples (LCS)							
Conductivity in Water	E100	2299272	1	20	5.0	5.0	✔
pH by Meter	E108	2299271	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	2301157	1	18	5.5	5.0	✔
TDS by Gravimetry	E162	2301175	1	19	5.2	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	2299276	1	20	5.0	5.0	✔
Chloride in Water by IC	E235.Cl	2299275	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	2299274	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	2299278	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	2299277	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	2299279	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	2299273	1	17	5.8	5.0	✔
Ammonia by Fluorescence	E298	2299815	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	2299813	1	9	11.1	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	2299814	1	9	11.1	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	2301873	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	2312206	2	40	5.0	5.0	✔
VOCs (BC List) by Headspace GC-MS	E611C	2299853	1	16	6.2	5.0	✔
PAHs in Water by Hexane LVI GC-MS	E641A	2300037	1	15	6.6	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
Method Blanks (MB)							
Conductivity in Water	E100	2299272	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	2301157	1	18	5.5	5.0	✔
TDS by Gravimetry	E162	2301175	1	19	5.2	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	2299276	1	20	5.0	5.0	✔
Chloride in Water by IC	E235.Cl	2299275	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	2299274	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	2299278	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	2299277	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	2299279	1	20	5.0	5.0	✔
Alkalinity Species by Titration	E290	2299273	1	17	5.8	5.0	✔
Ammonia by Fluorescence	E298	2299815	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	2299813	1	9	11.1	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	2299814	1	9	11.1	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	2301873	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	2312206	2	40	5.0	5.0	✔
VOCs (BC List) by Headspace GC-MS	E611C	2299853	1	16	6.2	5.0	✔
PAHs in Water by Hexane LVI GC-MS	E641A	2300037	1	15	6.6	5.0	✔
Matrix Spikes (MS)							
Bromide in Water by IC (Low Level)	E235.Br-L	2299276	1	20	5.0	5.0	✔
Chloride in Water by IC	E235.Cl	2299275	1	20	5.0	5.0	✔
Fluoride in Water by IC	E235.F	2299274	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	2299278	1	20	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	2299277	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	2299279	1	20	5.0	5.0	✔
Ammonia by Fluorescence	E298	2299815	1	20	5.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	2299813	1	9	11.1	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	2299814	1	9	11.1	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	2301873	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	2312206	2	40	5.0	5.0	✔
VOCs (BC List) by Headspace GC-MS	E611C	2299853	1	16	6.2	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 ALS Environmental - Vancouver	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 ALS Environmental - Vancouver	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.
TSS by Gravimetry	E160 ALS Environmental - Vancouver	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.
TDS by Gravimetry	E162 ALS Environmental - Vancouver	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at $180 \pm 2^\circ\text{C}$ for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl ALS Environmental - Vancouver	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 ALS Environmental - Vancouver	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 ALS Environmental - Vancouver	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 ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Sulfate in Water by IC	E235.SO4 ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 ALS Environmental - Vancouver	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.
Ammonia by Fluorescence	E298 ALS Environmental - Vancouver	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 Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 ALS Environmental - Vancouver	Water	Method Fialab 100, 2018	TKN 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 ALS Environmental - Vancouver	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 carbonate-based Inorganic Carbon (IC). Analysis is by high temperature combustion with infrared detection of CO ₂ . Forms of carbon associated with inorganic or organic molecules (e.g. SCN and CN) are included in NPOC if they are not removed by purging under acidic conditions. Notably, NPOC excludes most volatile organic compounds and free cyanide. For samples where the majority of Total Carbon is inorganic, this method provides greater accuracy and reliability versus the TOC by subtraction method (TC minus TIC).
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Vancouver	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 Mercury in Water by CVAAS	E509 ALS Environmental - Vancouver	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.
VOCs (BC List) by Headspace GC-MS	E611C ALS Environmental - Vancouver	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. Total Xylenes is the sum of m,p-Xylene & o-Xylene. Total BTEX is the sum of Benzene, Toluene, Ethylbenzene, & Total Xylenes. Total BTEX+Styrene is the sum of Total BTEX & Styrene. Total Trihalomethanes [THMs] is the sum of Bromodichloromethane, Bromoform, Chloroform, & Dibromochloromethane.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
PAHs in Water by Hexane LVI GC-MS	E641A ALS Environmental - Vancouver	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large-volume injection (LVI) GC-MS. Totals and sub-totals (e.g., ΣPAH, low and high MW PAHs) are reported as the sum of the individual target compounds detected; the detection limit for any sum is calculated by the root-sum-of-squares (RSS) of the individual analyte limits (per CCME Vol. 4 Analytical Methods). Benzo[a]pyrene total potency equivalents (B[a]P-TEQ/TPEQ) are calculated in accordance with CCME using the published potency-equivalency factors; non-detects are assigned one-half of the limit of reporting (LOR) in the TEQ calculation.
Dissolved Hardness (Calculated)	EC100 ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO ₃), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO ₃ 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.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Vancouver	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 ALS Environmental - Vancouver	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 ALS Environmental - Vancouver	Water		Preparation for Total Organic Carbon by Combustion
Dissolved Metals Water Filtration	EP421 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 µm), and preserved with HNO ₃ .
Dissolved Mercury Water Filtration	EP509 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 µm), and preserved with HCl.
VOCs Preparation for Headspace Analysis	EP581 ALS Environmental - Vancouver	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 a GC-MS-FID.
PHCs and PAHs Hexane Extraction	EP601 ALS Environmental - Vancouver	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	: VA25C8427	Page	: 1 of 17
Client	: Masse Environmental Consultants Ltd.	Laboratory	: ALS Environmental - Vancouver
Contact	: Ico de Zwart	Account Manager	: Can Dang
Address	: 812 Vernon Street Nelson BC Canada V1L 4G4	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 2016-503-RDKS Ootischenia	Date Samples Received	: 24-Oct-2025 12:00
PO	: ----	Date Analysis Commenced	: 25-Oct-2025
C-O-C number	: 22-20251023	Issue Date	: 03-Nov-2025 20:01
Sampler	: Chris Stephanou		
Site	: RDCK		
Quote number	: ----		
No. of samples received	: 8		
No. of samples analysed	: 8		

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
Chau Tran	Analyst	Vancouver Metals, Burnaby, British Columbia
Jaewook Lee	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Monica Ko	Supervisor - Inorganic	Vancouver Inorganics, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Vancouver Organics, Burnaby, British Columbia
Ruth Wahyudi	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
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.



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: **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
Physical Tests (QC Lot: 2299271)											
VA25C8358-005	Anonymous	pH	----	E108	0.10	pH units	7.96	7.93	0.378%	4%	----
Physical Tests (QC Lot: 2299272)											
VA25C8358-005	Anonymous	Conductivity	----	E100	2.0	µS/cm	148	149	0.202%	10%	----
Physical Tests (QC Lot: 2299273)											
VA25C8358-005	Anonymous	Alkalinity, total (as CaCO ₃)	----	E290	1.0	mg/L	72.6	74.4	2.45%	20%	----
Physical Tests (QC Lot: 2301157)											
VA25C8256-004	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 2301175)											
VA25C8256-004	Anonymous	Solids, total dissolved [TDS]	----	E162	20	mg/L	239	240	0.626%	20%	----
Anions and Nutrients (QC Lot: 2299274)											
VA25C8256-006	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.044	0.044	0.00009	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2299275)											
VA25C8256-006	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	2.02	2.00	0.01	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2299276)											
VA25C8256-006	Anonymous	Bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2299277)											
VA25C8256-006	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0782	0.0778	0.448%	20%	----
Anions and Nutrients (QC Lot: 2299278)											
VA25C8256-006	Anonymous	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: 2299279)											
VA25C8256-006	Anonymous	Sulfate (as SO ₄)	14808-79-8	E235.SO4	0.30	mg/L	30.6	30.6	0.0958%	20%	----
Anions and Nutrients (QC Lot: 2299813)											
VA25C8427-001	MW1-95(E232086)	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.061	0.069	0.008	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2299815)											
VA25C8427-001	MW1-95(E232086)	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0080	0.0084	0.0004	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 2299814)											
VA25C8427-001	MW1-95(E232086)	Carbon, total organic [TOC]	----	E355-L	0.50	mg/L	7.33	6.66	9.52%	20%	----
Dissolved Metals (QC Lot: 2301873)											
VA25C8346-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0073	0.0069	0.0004	Diff <2x LOR	----
		Antimony, dissolved	7440-36-0	E421	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
Dissolved Metals (QC Lot: 2301873) - continued											
VA25C8346-001	Anonymous	Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00039	0.00040	0.0000002	Diff <2x LOR	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0109	0.0110	1.06%	20%	----
		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	<0.000050	<0.000050	0	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	<0.0000050	0	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	25.7	25.5	0.730%	20%	----
		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	0.199	0.201	0.816%	20%	----
		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	0.100	mg/L	5.48	5.53	0.877%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0251	0.0256	1.90%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000599	0.000647	7.72%	20%	----
		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	0.100	mg/L	1.02	1.03	0.899%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00070	0.00070	0.000004	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000064	0.000059	0.000006	Diff <2x LOR	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	6.69	6.80	1.58%	20%	----
		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	4.00	4.10	2.50%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.117	0.128	8.90%	20%	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	0.85	0.98	0.14	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	<0.000010	<0.000010	0	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	0.000231	0.000245	5.90%	20%	----



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: 2301873) - continued											
VA25C8346-001	Anonymous	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	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 2312206)											
VA25C8419-014	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 2312207)											
VA25C8427-006	MW20-1(E323191)	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 2299853)											
VA25C8445-001	Anonymous	Benzene	71-43-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromodichloromethane	75-27-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromoform	75-25-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Chloroethane	75-00-3	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611C	0.50	µg/L	0.73	0.90	0.18	Diff <2x LOR	----
		Chloromethane	74-87-3	E611C	5.0	µg/L	<5.0	<5.0	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,3-	541-73-1	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, trans-1,2-	156-60-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611C	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Dichloropropane, 1,2-	78-87-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Styrene	100-42-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.20	µg/L	<0.20	<0.20	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
Volatile Organic Compounds (QC Lot: 2299853) - continued											
VA25C8445-001	Anonymous	Tetrachloroethylene	127-18-4	E611C	0.50	µg/L	47.6	48.8	2.47%	30%	----
		Toluene	108-88-3	E611C	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		Trichloroethane, 1,1,1-	71-55-6	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethane, 1,1,2-	79-00-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethylene	79-01-6	E611C	0.50	µg/L	<0.50	0.55	0.05	Diff <2x LOR	----
		Trichlorofluoromethane	75-69-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Vinyl chloride	75-01-4	E611C	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611C	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----



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
Physical Tests (QCLot: 2299272)						
Conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 2299273)						
Alkalinity, total (as CaCO ₃)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 2301157)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 2301175)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 2299274)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 2299275)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 2299276)						
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 2299277)						
Nitrate (as N)	14797-55-8	E235.NO ₃ -L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 2299278)						
Nitrite (as N)	14797-65-0	E235.NO ₂ -L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 2299279)						
Sulfate (as SO ₄)	14808-79-8	E235.SO ₄	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 2299813)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 2299815)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Organic / Inorganic Carbon (QCLot: 2299814)						
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Dissolved Metals (QCLot: 2301873)						
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	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 2301873) - continued						
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	----
Tin, dissolved	7440-31-5	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	----
Dissolved Metals (QCLot: 2312206)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 2312207)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Volatile Organic Compounds (QCLot: 2299853)						
Benzene	71-43-2	E611C	0.5	µg/L	<0.50	----
Bromodichloromethane	75-27-4	E611C	0.5	µg/L	<0.50	----
Bromoform	75-25-2	E611C	0.5	µg/L	<0.50	----
Carbon tetrachloride	56-23-5	E611C	0.5	µg/L	<0.50	----
Chlorobenzene	108-90-7	E611C	0.5	µg/L	<0.50	----
Chloroethane	75-00-3	E611C	0.5	µg/L	<0.50	----
Chloroform	67-66-3	E611C	0.5	µg/L	<0.50	----
Chloromethane	74-87-3	E611C	5	µg/L	<5.0	----
Dibromochloromethane	124-48-1	E611C	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,2-	95-50-1	E611C	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,3-	541-73-1	E611C	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,4-	106-46-7	E611C	0.5	µg/L	<0.50	----
Dichloroethane, 1,1-	75-34-3	E611C	0.5	µg/L	<0.50	----
Dichloroethane, 1,2-	107-06-2	E611C	0.5	µg/L	<0.50	----
Dichloroethylene, 1,1-	75-35-4	E611C	0.5	µg/L	<0.50	----
Dichloroethylene, cis-1,2-	156-59-2	E611C	0.5	µg/L	<0.50	----
Dichloroethylene, trans-1,2-	156-60-5	E611C	0.5	µg/L	<0.50	----
Dichloromethane	75-09-2	E611C	1	µg/L	<1.0	----
Dichloropropane, 1,2-	78-87-5	E611C	0.5	µg/L	<0.50	----
Dichloropropylene, cis-1,3-	10061-01-5	E611C	0.5	µg/L	<0.50	----
Dichloropropylene, trans-1,3-	10061-02-6	E611C	0.5	µg/L	<0.50	----
Ethylbenzene	100-41-4	E611C	0.5	µg/L	<0.50	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.5	µg/L	<0.50	----
Styrene	100-42-5	E611C	0.5	µg/L	<0.50	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.5	µg/L	<0.50	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.2	µg/L	<0.20	----
Tetrachloroethylene	127-18-4	E611C	0.5	µg/L	<0.50	----
Toluene	108-88-3	E611C	0.4	µg/L	<0.40	----
Trichloroethane, 1,1,1-	71-55-6	E611C	0.5	µg/L	<0.50	----
Trichloroethane, 1,1,2-	79-00-5	E611C	0.5	µg/L	<0.50	----
Trichloroethylene	79-01-6	E611C	0.5	µg/L	<0.50	----
Trichlorofluoromethane	75-69-4	E611C	0.5	µg/L	<0.50	----
Vinyl chloride	75-01-4	E611C	0.4	µg/L	<0.40	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 2299853) - continued						
Xylene, m+p-	179601-23-1	E611C	0.4	µg/L	<0.40	----
Xylene, o-	95-47-6	E611C	0.3	µg/L	<0.30	----
Polycyclic Aromatic Hydrocarbons (QCLot: 2300037)						
Acenaphthene	83-32-9	E641A	0.01	µg/L	<0.010	----
Acenaphthylene	208-96-8	E641A	0.01	µg/L	<0.010	----
Acridine	260-94-6	E641A	0.01	µg/L	<0.010	----
Anthracene	120-12-7	E641A	0.01	µg/L	<0.010	----
Benz(a)anthracene	56-55-3	E641A	0.01	µg/L	<0.010	----
Benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	<0.0050	----
Benzo(b+j)fluoranthene	n/a	E641A	0.01	µg/L	<0.010	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	<0.010	----
Benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	<0.010	----
Chrysene	218-01-9	E641A	0.01	µg/L	<0.010	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	<0.0050	----
Fluoranthene	206-44-0	E641A	0.01	µg/L	<0.010	----
Fluorene	86-73-7	E641A	0.01	µg/L	<0.010	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	<0.010	----
Methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	<0.010	----
Methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	<0.010	----
Naphthalene	91-20-3	E641A	0.05	µg/L	<0.050	----
Phenanthrene	85-01-8	E641A	0.02	µg/L	<0.020	----
Pyrene	129-00-0	E641A	0.01	µg/L	<0.010	----
Quinoline	91-22-5	E641A	0.05	µg/L	<0.050	----



Laboratory Control Sample (LCS) Report

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

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 2299271)									
pH	----	E108	----	pH units	7 pH units	99.6	98.0	102	----
Physical Tests (QCLot: 2299272)									
Conductivity	----	E100	1	µS/cm	147 µS/cm	98.9	90.0	110	----
Physical Tests (QCLot: 2299273)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	101	85.0	115	----
Physical Tests (QCLot: 2301157)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	96.0	85.0	115	----
Physical Tests (QCLot: 2301175)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	104	85.0	115	----
Anions and Nutrients (QCLot: 2299274)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.7	90.0	110	----
Anions and Nutrients (QCLot: 2299275)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	99.1	90.0	110	----
Anions and Nutrients (QCLot: 2299276)									
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	105	85.0	115	----
Anions and Nutrients (QCLot: 2299277)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	98.9	90.0	110	----
Anions and Nutrients (QCLot: 2299278)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	96.7	90.0	110	----
Anions and Nutrients (QCLot: 2299279)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 2299813)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	98.1	75.0	125	----
Anions and Nutrients (QCLot: 2299815)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	102	85.0	115	----
Organic / Inorganic Carbon (QCLot: 2299814)									
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	100	80.0	120	----
Dissolved Metals (QCLot: 2301873)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	109	80.0	120	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 2301873) - continued									
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.7	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.6	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	96.1	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	108	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.3	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	107	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	107	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	105	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	102	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.0	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	103	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	110	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	104	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	105	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	105	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	98.0	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	106	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	114	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	100	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	103	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	105	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	99.6	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	102	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	105	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 2301873) - continued									
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	97.9	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0 mg/L	91.7	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0 mg/L	90.8	80.0	120	----
Volatile Organic Compounds (QCLot: 2299853)									
Benzene	71-43-2	E611C	0.5	µg/L	100 µg/L	104	70.0	130	----
Bromodichloromethane	75-27-4	E611C	0.5	µg/L	100 µg/L	102	70.0	130	----
Bromoform	75-25-2	E611C	0.5	µg/L	100 µg/L	104	70.0	130	----
Carbon tetrachloride	56-23-5	E611C	0.5	µg/L	100 µg/L	106	70.0	130	----
Chlorobenzene	108-90-7	E611C	0.5	µg/L	100 µg/L	106	70.0	130	----
Chloroethane	75-00-3	E611C	0.5	µg/L	100 µg/L	102	60.0	140	----
Chloroform	67-66-3	E611C	0.5	µg/L	100 µg/L	107	70.0	130	----
Chloromethane	74-87-3	E611C	5	µg/L	100 µg/L	107	60.0	140	----
Dibromochloromethane	124-48-1	E611C	0.5	µg/L	100 µg/L	103	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611C	0.5	µg/L	100 µg/L	106	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611C	0.5	µg/L	100 µg/L	107	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611C	0.5	µg/L	100 µg/L	109	70.0	130	----
Dichloroethane, 1,1-	75-34-3	E611C	0.5	µg/L	100 µg/L	106	70.0	130	----
Dichloroethane, 1,2-	107-06-2	E611C	0.5	µg/L	100 µg/L	107	70.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611C	0.5	µg/L	100 µg/L	105	70.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611C	0.5	µg/L	100 µg/L	105	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611C	0.5	µg/L	100 µg/L	106	70.0	130	----
Dichloromethane	75-09-2	E611C	1	µg/L	100 µg/L	105	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611C	0.5	µg/L	100 µg/L	108	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611C	0.5	µg/L	100 µg/L	100	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611C	0.5	µg/L	100 µg/L	96.2	70.0	130	----
Ethylbenzene	100-41-4	E611C	0.5	µg/L	100 µg/L	91.9	70.0	130	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.5	µg/L	100 µg/L	106	70.0	130	----
Styrene	100-42-5	E611C	0.5	µg/L	100 µg/L	101	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.5	µg/L	100 µg/L	106	70.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.2	µg/L	100 µg/L	108	70.0	130	----
Tetrachloroethylene	127-18-4	E611C	0.5	µg/L	100 µg/L	102	70.0	130	----
Toluene	108-88-3	E611C	0.4	µg/L	100 µg/L	103	70.0	130	----
Trichloroethane, 1,1,1-	71-55-6	E611C	0.5	µg/L	100 µg/L	106	70.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611C	0.5	µg/L	100 µg/L	104	70.0	130	----



Sub-Matrix: Water					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Target Concentration	LCS	Low	High	
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 2299853) - continued									
Trichloroethylene	79-01-6	E611C	0.5	µg/L	100 µg/L	103	70.0	130	----
Trichlorofluoromethane	75-69-4	E611C	0.5	µg/L	100 µg/L	111	60.0	140	----
Vinyl chloride	75-01-4	E611C	0.4	µg/L	100 µg/L	111	60.0	140	----
Xylene, m+p-	179601-23-1	E611C	0.4	µg/L	200 µg/L	100	70.0	130	----
Xylene, o-	95-47-6	E611C	0.3	µg/L	100 µg/L	94.7	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 2300037)									
Acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	102	60.0	130	----
Acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	107	60.0	130	----
Acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	104	60.0	130	----
Anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	106	60.0	130	----
Benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	101	60.0	130	----
Benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	102	60.0	130	----
Benzo(b+j)fluoranthene	n/a	E641A	0.01	µg/L	0.5 µg/L	108	60.0	130	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	104	60.0	130	----
Benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	109	60.0	130	----
Chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	103	60.0	130	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	113	60.0	130	----
Fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	107	60.0	130	----
Fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	103	60.0	130	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	104	60.0	130	----
Methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	94.2	60.0	130	----
Methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	103	60.0	130	----
Naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	102	50.0	130	----
Phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	111	60.0	130	----
Pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	108	60.0	130	----
Quinoline	91-22-5	E641A	0.05	µg/L	0.5 µg/L	107	60.0	130	----



Matrix Spike (MS) Report

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 >= 1x spike level.

Laboratory sample ID					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
Client sample ID	Analyte	CAS Number	Method							
Anions and Nutrients (QCLot: 2299274)										
VA25C8256-007	Anonymous	Fluoride	16984-48-8	E235.F	1.04 mg/L	1 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 2299275)										
VA25C8256-007	Anonymous	Chloride	16887-00-6	E235.Cl	102 mg/L	100 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 2299276)										
VA25C8256-007	Anonymous	Bromide	24959-67-9	E235.Br-L	0.535 mg/L	0.5 mg/L	107	75.0	125	----
Anions and Nutrients (QCLot: 2299277)										
VA25C8256-007	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.57 mg/L	2.5 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 2299278)										
VA25C8256-007	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.482 mg/L	0.5 mg/L	96.5	75.0	125	----
Anions and Nutrients (QCLot: 2299279)										
VA25C8256-007	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	103 mg/L	100 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 2299813)										
VA25C8427-002	MW06-05(E253791)	Kjeldahl nitrogen, total [TKN]	----	E318	2.46 mg/L	2.5 mg/L	98.2	70.0	130	----
Anions and Nutrients (QCLot: 2299815)										
VA25C8427-002	MW06-05(E253791)	Ammonia, total (as N)	7664-41-7	E298	0.101 mg/L	0.1 mg/L	101	75.0	125	----
Organic / Inorganic Carbon (QCLot: 2299814)										
VA25C8427-002	MW06-05(E253791)	Carbon, total organic [TOC]	----	E355-L	4.87 mg/L	5 mg/L	97.3	70.0	130	----
Dissolved Metals (QCLot: 2301873)										
VA25C8376-021	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.195 mg/L	0.2 mg/L	97.7	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	ND mg/L	----	ND	70.0	130	----
		Barium, dissolved	7440-39-3	E421	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.0378 mg/L	0.04 mg/L	94.5	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00905 mg/L	0.01 mg/L	90.5	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.093 mg/L	0.1 mg/L	93.4	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00386 mg/L	0.004 mg/L	96.5	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	----	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.0101 mg/L	0.01 mg/L	101	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0185 mg/L	0.02 mg/L	92.6	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0184 mg/L	0.02 mg/L	91.9	70.0	130	----
		Iron, dissolved	7439-89-6	E421	1.95 mg/L	2 mg/L	97.3	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0183 mg/L	0.02 mg/L	91.5	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.0956 mg/L	0.1 mg/L	95.6	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: 2301873) - continued										
VA25C8376-021	Anonymous	Magnesium, dissolved	7439-95-4	E421	ND mg/L	----	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0366 mg/L	0.04 mg/L	91.4	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	9.95 mg/L	10 mg/L	99.5	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	3.76 mg/L	4 mg/L	94.0	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0197 mg/L	0.02 mg/L	98.3	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	9.18 mg/L	10 mg/L	91.8	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00389 mg/L	0.004 mg/L	97.3	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	1.89 mg/L	2 mg/L	94.4	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	ND mg/L	----	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	ND mg/L	----	ND	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.0417 mg/L	0.04 mg/L	104	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00359 mg/L	0.004 mg/L	89.7	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.5	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0382 mg/L	0.04 mg/L	95.5	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.00372 mg/L	0.004 mg/L	93.1	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.0959 mg/L	0.1 mg/L	95.9	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.352 mg/L	0.4 mg/L	88.0	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0400 mg/L	0.04 mg/L	99.9	70.0	130	----
Dissolved Metals (QCLot: 2312206)										
VA25C8419-015	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000906 mg/L	0 mg/L	90.6	70.0	130	----
Dissolved Metals (QCLot: 2312207)										
VA25C8427-007	Duplicate	Mercury, dissolved	7439-97-6	E509	0.0000878 mg/L	0 mg/L	87.8	70.0	130	----
Volatile Organic Compounds (QCLot: 2299853)										
VA25C8427-002	MW06-05(E253791)	Benzene	71-43-2	E611C	104 µg/L	100 µg/L	104	60.0	140	----
		Bromodichloromethane	75-27-4	E611C	101 µg/L	100 µg/L	101	60.0	140	----
		Bromoform	75-25-2	E611C	102 µg/L	100 µg/L	102	60.0	140	----
		Carbon tetrachloride	56-23-5	E611C	105 µg/L	100 µg/L	105	60.0	140	----
		Chlorobenzene	108-90-7	E611C	104 µg/L	100 µg/L	104	60.0	140	----
		Chloroethane	75-00-3	E611C	89.2 µg/L	100 µg/L	89.2	50.0	150	----
		Chloroform	67-66-3	E611C	107 µg/L	100 µg/L	107	60.0	140	----
		Chloromethane	74-87-3	E611C	75.6 µg/L	100 µg/L	75.6	50.0	150	----
		Dibromochloromethane	124-48-1	E611C	99.5 µg/L	100 µg/L	99.5	60.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611C	106 µg/L	100 µg/L	106	60.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611C	109 µg/L	100 µg/L	109	60.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611C	110 µg/L	100 µg/L	110	60.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611C	106 µg/L	100 µg/L	106	60.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611C	107 µg/L	100 µg/L	107	60.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611C	97.3 µg/L	100 µg/L	97.3	60.0	140	----



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
Volatile Organic Compounds (QCLot: 2299853) - continued										
VA25C8427-002	MW06-05(E253791)	Dichloroethylene, cis-1,2-	156-59-2	E611C	105 µg/L	100 µg/L	105	60.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611C	103 µg/L	100 µg/L	103	60.0	140	----
		Dichloromethane	75-09-2	E611C	104 µg/L	100 µg/L	104	60.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611C	110 µg/L	100 µg/L	110	60.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611C	99.1 µg/L	100 µg/L	99.1	60.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611C	93.7 µg/L	100 µg/L	93.7	60.0	140	----
		Ethylbenzene	100-41-4	E611C	90.8 µg/L	100 µg/L	90.8	60.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	108 µg/L	100 µg/L	108	60.0	140	----
		Styrene	100-42-5	E611C	96.9 µg/L	100 µg/L	96.9	60.0	140	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611C	102 µg/L	100 µg/L	102	60.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611C	104 µg/L	100 µg/L	104	60.0	140	----
		Tetrachloroethylene	127-18-4	E611C	102 µg/L	100 µg/L	102	60.0	140	----
		Toluene	108-88-3	E611C	103 µg/L	100 µg/L	103	60.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611C	105 µg/L	100 µg/L	105	60.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611C	102 µg/L	100 µg/L	102	60.0	140	----
		Trichloroethylene	79-01-6	E611C	103 µg/L	100 µg/L	103	60.0	140	----
		Trichlorofluoromethane	75-69-4	E611C	99.2 µg/L	100 µg/L	99.2	50.0	150	----
		Vinyl chloride	75-01-4	E611C	84.1 µg/L	100 µg/L	84.1	50.0	150	----
		Xylene, m+p-	179601-23-1	E611C	199 µg/L	200 µg/L	99.7	60.0	140	----
		Xylene, o-	95-47-6	E611C	93.1 µg/L	100 µg/L	93.1	60.0	140	----



COC Number: **22 - 70251023**

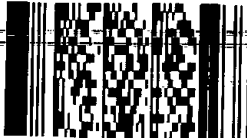
Page 1 of

Canada Toll Free: 1 800 668 9878

Work Order Reference
VA25C8427



Telephone : +1 604 253 4188

Report To		Contact and company name below will appear on the final report		Reports / Recipients		Turnaround Time (TAT) Requested										Vancouver Work Order Reference VA25C8427												
Company:		Masse Environmental		Select Report Format: ☒ PDF ☒ EXCEL ☒ EDD (DIGITAL)		☒ Routine [R] if received by 3pm M-F - no surcharges apply ☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum ☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum ☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum ☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum ☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.																						
Contact:		Ico deZwart		Merge QC/QCI Reports with COA ☒ YES ☐ NO ☐ N/A ☐ Compare Results to Criteria on Report - provide details below if box checked																								
Phone:		250-505-3479		Select Distribution: ☒ EMAIL ☐ MAIL ☐ FAX												Telephone : +1 604 253 4186												
Company address below will appear on the final report																												
Street:		812 Vernon St.		Email 1 or Fax ico@masseenvironmental.com												Additional fees may apply to rush requests on weekends, stat												
City/Province:		Nelson, BC		Email 2 chris@masseenvironmental.com																								
Postal Code:		V1L 4G4		Email 3 jenn@masseenvironmental.com												Date and Time Required for all E&P TATs:												
Invoice To		Same as Report To ☒ YES ☐ NO		Invoice Recipients												Analysis Required												
		Copy of Invoice with Report ☒ YES ☐ NO		Select Invoice Distribution: ☒ EMAIL ☐ MAIL ☐ FAX																								
Company:		RDCK		Email 1 or Fax lise@masseenvironmental.com												For all tests with rush TATs requested, please contact												
Contact:		Accounts Payable/Nathan Schilman		Email 2																								
Project Information				Oil and Gas Required Fields (client use)				NUMBER OF CONTAINERS										SAMPLES ON HOLD			EXTENDED STORAGE REQUIRE			SUSPECTED HAZARD (see notes)				
ALS Account # / Quote #: VA24-MASS200-001				AFE/Cost Center: PO#																								
Job #: 2016-503- RDCK Ootischenia				Major/Minor Code: Routing Code:																								
PO / AFE:				Requisitioner:																								
LSD:				Location:																								
ALS Lab Work Order # (ALS use only):				ALS Contact: Can Dang Sampler: C.Stephanou																								
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																				
		MW1-95 (E232086)		10-Oct-25		10:01		GW		6																		
		MW06-05 (E253791)		21-Oct-25		13:55		GW		10																		
		MW07-05 (E335845)		21-Oct-25		15:15		GW		10																		
		MW14-01 (E303871)		21-Oct-25		4:56		GW		6																		
		MW14-02 (E000070)						GW																				
		MW17-01 (E309187)						GW																				
		MW17-02 (E009190)						GW																				
		MW17-03 (E309189)		10-Oct-25		11:46		GW		6																		
		MW20-1 (E323191)		21-Oct-25		17:15		GW		6																		
		Duplicate		21-Oct-25		13:55		GW		6																		
		Field Blank		21-Oct-25		15:55		GW		6																		
Drinking Water (DW) Samples¹ (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? ☐ YES ☐ NO								Cooling Method: ☐ NONE ☐ ICE ☒ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED																				
Are samples for human consumption/ use? ☐ YES ☐ NO												Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO																
								Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A																				
								INITIAL COOLER TEMPERATURES °C: 8 FINAL COOLER TEMPERATURES °C: 9																				
SHIPMENT RELEASE (client use)				INITIAL SHIPMENT RECEPTION (ALS use only)				FINAL SHIPMENT RECEPTION (ALS use only)																				
Released by: [Signature] Date: 23-Oct-2025 Time: 11:00				Received by: [Signature] Date: 24/10 Time: 12:00																								

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY

YELLOW - CLIENT COPY

JULY 2022 FRONT

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**.