SQUAMISH
HARDWIRED *for* ADVENTURE

2024 DRINKING WATER QUALITY

ANNUAL REPORT

DISTRICT OF SQUAMISH
June 2025

District of Squamish 37955 Second Avenue PO Box 310 Squamish British Columbia V8B 0A3
Ph: 604.892.5217 or 1.877.892.5217 squamish.ca

Contents

Executive Summary

This report details the District of Squamish's drinking water supply and distribution system operations for the 2024 calendar year. The District of Squamish is located within the unceded traditional territory of the Sḵwx̱wú7mesh (Squamish) and Tsleil-Waututh Nations. The District of Squamish's Water Supply and Distribution (WS&D) system is governed by the Province of British Columbia's Drinking Water Protection Act and Regulation (DWPA&R), Water Sustainability Act (WSA) and Ground Water Protection Regulation (GWPR), as well as a Permit to Operate, issued by Vancouver Coastal Health. In 2024, water samples were tested weekly for *E. coli* and total coliform bacteria to ensure water quality parameters met the applicable Guidelines for Canadian Drinking Water Quality set out by Health Canada and the potable water quality standards of the BC Drinking Water Protection Act.

The Squamish WS&D system is operated and maintained by the District of Squamish Water Utility team and is monitored 24 hours/day 365 days/year via the Supervisory Control and Data Acquisition (SCADA) system to ensure optimal and uninterrupted service to the community. The District of Squamish continues active programs relating to water quality, water conservation & loss prevention, water metering, unidirectional and dead-end flushing, and cross connection control in effort to reduce the demand on the water supply system and ensure the provision of clean and safe drinking water to the community. In addition, the District of Squamish implements several operational and capital improvement and renewal initiatives to increase system reliability and ensure long-term service sustainability.

1.0 Introduction

The purpose of this report is to meet the requirements of the BC Drinking Water Protection Act and Regulation, the requirements of the District's permit to operate and outline the District's efforts to provide first class potable drinking water. This annual report is also a summary of the Districts ongoing sampling plan, infrastructure upgrades, water master plan and other undertakings by the District to ensure safe and reliable drinking water

The District of Squamish can supply water to the community from three sources. The District maintains a primary groundwater source and two surface water sources which are reserved for emergency backup. All water supplies are equipped with either primary or secondary chlorine disinfection. In 2024 the distribution system consisted of nine (9) reservoirs, twenty-one (21) pressure reducing valve (PRV) stations, four (4) pump stations, 835 fire hydrants, 8,700 service connections, and 180 km of watermain. The system delivered potable water to approximately 29,132 residents (DoS Projections), nearly 800 industrial, commercial and institutional (ICI) customers, and the Sťá7mes (Stawamus 24), Yékw'apsem (Yekwaupsum 18), Kaw̓ tín (Kowtain 17), Siy̓ích'em (Seaichem 16) and Wíwk'em (Waiwaikum 14) First Nations Reserves within the District of Squamish. In 2024, the District provided 4.73 million cubic meters (m^3) of potable water for consumption. The system experienced an Average Daily Demand (ADD) of 13 ML/day and a Maximum Daily Demand (MDD) of 19.1 ML/day.

The District employs a Supervisory Control and Data Acquisition (SCADA) system that continuously monitors the WS&D system, records data, and alerts District staff to areas of concern, faults, and failures in the system.

2.0 Water Source

The District of Squamish can obtain its water from three sources:

- Primary Supply: Powerhouse Springs well field (main water supply to both South and North distribution system)
- Emergency Backup Supply:
    - Stawamus River (South distribution Emergency Backup Water Supply)
    - Mashiter Creek (North distribution Emergency Backup Water supply)

The primary supply infrastructure is comprised of seven (7) groundwater wells at the Powerhouse Springs well field. If the well field is compromised or unable to meet the distribution system demands (due to a watermain break, pump failure, major fire flow demand, or other emergency), water can be drawn from Stawamus River and/or Mashiter Creek. These surface water sources are available as backup only and require boil water advisory if utilized. **In 2024, there was no surface water use in the District of Squamish's potable water system.**

2.1 Powerhouse Springs Well Site

In 2024, the Powerhouse Springs well site, located near the confluence of Ring Creek and the Mamquam River, operated seven (7) ground water wells which provide high quality potable water to the District of Squamish. A full description of the system's potential can be found in the District of Squamish – Water Master Plan, which was renewed in 2024. A well protection plan (WPP), completed by Piteau Associates Engineering LTD, was also adopted in 2014 to further protect our primary water source. Both documents are publicly available on the District website. Due to the high quality of the PHS water source, primary treatment is not needed. Secondary chlorination is provided to ensure the microbial safety of the water as it travels throughout the distribution network. District staff work to maintain a minimum chlorine residual of 0.20mg/L at the end of the distribution network.

2.1.1 Ring Creek Aquifer

The Ring Creek Aquifer, the source for PHS, is recharged primarily by seepage from Ring Creek and Skookum Creek (69%). Rainfall and snowmelt seepage through the lava flow formation also recharges the aquifer (31%)[1]. A 2014 hydrogeological assessment concluded that water withdrawn from the aquifer at PHS poses a "low risk of containing pathogens"[1]. As such, primary disinfection of the water pumped from the Ring Creek Aquifer is not necessary. A groundwater protection zone has been established above the aquifer to limit land use activities within the 5-year well capture zone. The district has erected signs to inform the public and is working with commercial users in the area to prevent hazardous materials from entering the aquifer.

2.1.2 Powerhouse Springs Wells Rehabilitation

The District's waterworks department retains a Professional Hydrogeologist and a qualified well maintenance contractor to conduct well rehabilitation works. Well number 6 (PW-6) was rehabilitated in May 2024 along with a hydraulic performance assessment of well number 2 (PW-2). A report was authored by Kalwij Water Dynamics (KWD) in October 2024 summarizing current well status and providing recommendations of future work for 2025.

2.1.3 Chlorination of Powerhouse Springs Water

Groundwater pumped out of the Powerhouse Springs well field does not require primary disinfection. Sodium hypochlorite (NaClO) is used as a secondary disinfection method to prevent microbial growth in water travelling within the distribution system. Utilities staff strive to maintain a minimum concentration of 0.20 mg/l free residual chlorine at all points within the distribution system as per the Guidelines for Canadian Drinking Water Quality.

In addition to routine grab sample testing, free chlorine residuals are continuously measured using online chlorine analyzers monitored by SCADA at nine (9) locations throughout the distribution system.

[1] Powerhouse Springs Well Protection Plan, Piteau Associates Engineering Ltd, 2014

2.2 Emergency Surface Water Sources: Stawamus River & Mashiter Creek

In the event of an emergency or water demand in excess of the Powerhouse Springs well field capacity, water can be drawn from the Stawamus River and Mashiter Creek. Water from these two surface intakes is treated using sodium hypochlorite chlorination as a primary disinfectant prior to distribution. Surface water sources are prone to variable water quality, unlike groundwater taken from an aquifer. For this reason, if back-up sources are utilized, the District will immediately consult with VCH to assess water quality conditions and obtain advice. It is likely that a Boil Water Advisory would be implemented should water from either of the surface water sources enter the distribution system. As such, a double block and bleed system is in place to ensure water from surface water sources cannot enter the WS&D system without on-site operator intervention. The District holds a water license for the Stawamus River and Mashiter Creek for 132 L/s and 184 L/s, respectively.

2.3 Risk Assessment and Mitigation

The District of Squamish is fortunate to have multiple sources of freshwater. However, the District is constantly monitoring the supply and distribution system for potential risks. Risks may include:

- Increasing population causing increased consumption and requiring capital upgrades to maintain adequate fire flow capacity within the distribution system
- Aging infrastructure causing water loss and infrastructure failure
- Surface water sources are at risk of contamination from human and animal activity in the catchment area
- Increased development rates causing water main and service breaks during ground disturbance and construction activity
- Backflow / back-siphonage events from private property causing water system contamination
- Effects of climate change:
    - Glacier recession and lower than historical average snowpack reducing aquifer recharge rates
    - Increased likelihood of wildfire affecting critical infrastructure and watershed supply
    - Increased demand due to increased drought conditions
    - Increased Peak Hour Demand and Max Day Demand due to abnormally high temperatures

Proactive measures and ongoing maintenance programs in place to mitigate potential risks include:

- An update of the Water Master Plan (WMP) was completed in 2024
- The District of Squamish Asset Management Plan (AMP) was revised and adopted by Council in 2022
- An observation well (OW 483) is installed upstream of the PHS well field to monitor for fluctuations in aquifer capacity and water quality
- Implementation of a Water Conservation Plan
- Implementation of a Well Protection Plan

- Community water supply land designations are in place for both emergency surface water sources
- Implementation of a Cross Connection Control program and bylaw

3.0 Asset Management, Upgrades, Major Maintenance and Developer Contributions

The District of Squamish maintains and continues to improve its water distribution system to provide the best service possible. This section summarizes both District capital improvements and new developer contributed infrastructure.

3.1 Developer Infrastructure Contributions

Contribution	**Quantity**
300mm Watermain	264m
250mm Watermain	30m
200mm Watermain	7m
150mm Watermain	35m
New Services	5 services
Fire Hydrants	23 hydrants

3.2 Capital Improvements

The District continues to upgrade and replace portions of the water distribution system to ensure consistent and safe delivery to customers. In 2024, five(5) major upgrades were completed to the Districts WS&D system. Over 800m of new watermains were installed at Axen Road, Government Road, Mamquam Road and Tantalus Road. These projects replaced aging infrastructure and increased fire flows. A new pressure reducing valve chamber was installed at Thunderbird Ridge to replace end-of-life infrastructure and improve safety for Operators. System maintenance and upgrades will continue in future years as per the District's Asset Management Plan and Water Master Plan recommendations.

As well, the District installed new turbidity meters at Powerhouse Springs, Mashiter Creek and Stawamus River water supply sites.

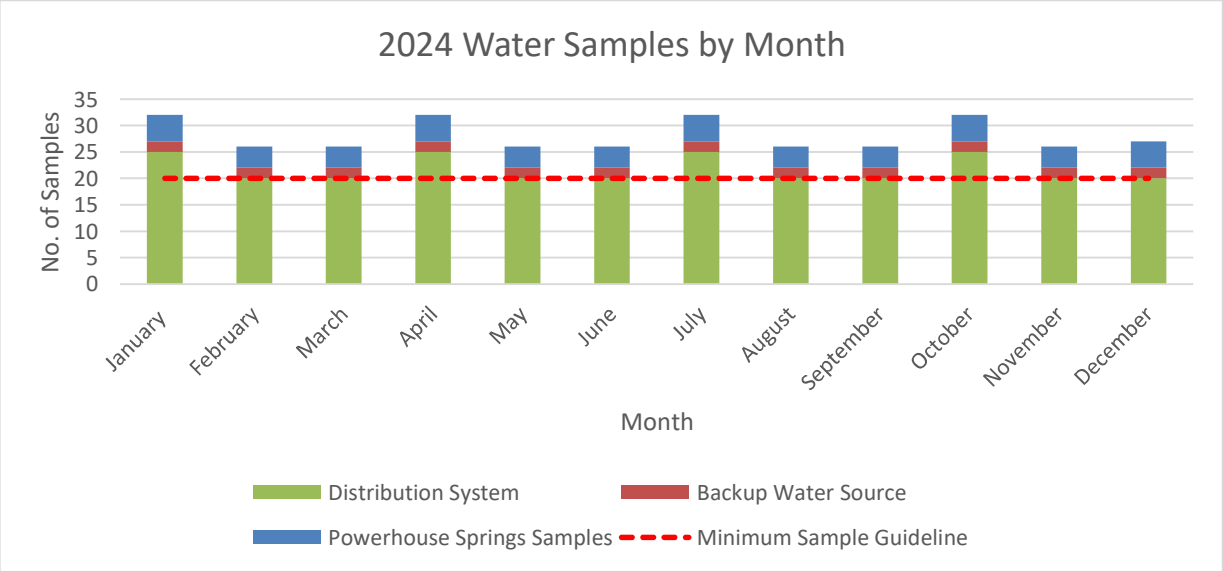
4.0 Standards & Testing Results for Water Supply System

The District of Squamish holds a "Permit to Operate" a water supply system under VCH. The permit includes conditions that must be met to maintain this permit in good standing which are outlined in the following subsections. A copy of the permit is included in Appendix A - Permit to Operate.

4.1 Bacteriological Sampling

The Districts Permit to Operate requires that the District collect and analyze a minimum of 20 bacteriological samples per month from the distribution system. In 2024 the average number of water samples tested per month was 25 Figure 1 shows the number of monthly samples analyzed for bacteriological parameters in 2024. Sample test results are provided in detail in Appendix C - Water Sample Station Locations, and Appendix E – Weekly Water Sample Results.

Figure 1. Number of monthly samples collected for bacteriological testing for the District of Squamish in 2024.



Water quality standards for potable water[2] are as follows:

Drinking Water Protection Act

DRINKING WATER PROTECTION REGULATION

[includes amendments up to B.C. Reg. 352/2005, December 9, 2005]

Parameter:	Standard:
Fecal coliform bacteria	No detectable fecal coliform bacteria per 100 ml
Escherichia coli	No detectable *Escherichia coli* per 100 ml
Total coliform bacteria	
(a) 1 sample in a 30 day period	No detectable total coliform bacteria per 100 ml
(b) more than 1 sample in a 30 day period	At least 90% of samples have no detectable total coliform bacteria per 100 ml and no sample has more than 10 total coliform bacteria per 100 ml

[2]*Drinking Water Protection Act, SBC 2001, c. 9.* BC Laws, Government of British Columbia, 2001, www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/00_01009_01#part2.

A summary of the bacteriological testing results for the District of Squamish in 2023 is shown in Table 1.

Table 1. Summary of the bacteriological testing results for the District of Squamish in 2024.

Water Distribution Sample Location	# of Samples	*E. coli* (EC/100 mL)			Total Coliform (TCU/100 mL)		
		minimum	maximum	average	minimum	maximum	average
Birken	25	<1	<1	<1	<1	<1	<1
Rockridge	26	<1	<1	<1	<1	<1	<1
Perth	26	<1	<1	<1	<1	<1	<1
Progress Way	26	<1	<1	<1	<1	<1	<1
Guildford	25	<1	<1	<1	<1	<1	<1
Quest University	25	<1	<1	<1	<1	<1	<1
Lomond	25	<1	<1	<1	<1	<1	<1
Parkway	26	<1	<1	<1	<1	<1	<1
Pemberton	26	<1	<1	<1	<1	<1	<1
Crumpit Woods	27	<1	<1	<1	<1	<1	<1
Powerhouse Springs (Pre-chlorination)	51	<1	<1	<1	<1	<1	<1
Total Samples:	**308**						

100% of the total samples tested negative or <1 per/100 mL for *E.coli* and Total Coliform in the distribution system over the monitoring period in 2024.

4.2 Physical and Chemical Parameters

Water samples are analyzed for a wide range of physical and chemical parameters by an independent lab to ensure that potable water distributed within the District of Squamish meets the Guidelines for Canadian Drinking Water Quality (GCDWQ). Samples are tested semi-annually for physical and chemical parameters at Powerhouse Springs (the District's primary water source), and annually at Stawamus River and Mashiter Creek (emergency backup water sources).

In 2024 samples were also collected and analyzed for disinfection by-products at four (4) sample locations within the distribution system . Disinfection by-products (DPB's) are chemical compounds that form when chlorine compounds react with organic matter dissolved in water. All samples analyzed contained levels of disinfection by-products below the GCDWQ's maximum acceptable concentration (MAC) and detectable threshold.

4.2.1 Water Chemical Composition

The District's water source is soft (low in hardness), low in alkalinity, and exhibits a neutral to slightly basic pH (pH>7). The physical and chemical composition of the source water is tested biannually to ensure consistent quality. The District ensures that the supplied drinking water is in accordance with both Provincial and Federal guidelines. For further information, consult appendix F – Physical and Chemical

Analysis and appendix G – Annual Surface Water Analysis. The District does not have any lead pipes or lead-based infrastructure and maintains lead concentrations in drinking water below the Maximum Acceptable Concentration (MAC) guideline of 0.005 mg/L. For further information on lead in domestic, please refer to VCH's flushing guideline in Appendix D.

5.0 Conditions of Permit to Operate a Water Supply System

Under permit from VCH, the District employs a variety of plans and programs to ensure safe and high quality drinking water for its residents. These vary from physical mitigations, monitoring, and routine checks to ensure all aspects of the system are running smoothly.

5.1 Cross-Connection Control Program

The District of Squamish continues to operate its Cross Connection Control (CCC) Program to protect the safety of the drinking water system. Contamination of the potable water system can happen from backflow through cross connections with private plumbing systems. A cross connection is a physical connection between a potable water supply system and a source of contamination. A backflow or back-syphon event is the undesired reverse flow of water creating the potential for contaminants to be drawn back into the potable water supply system if a negative pressure event, such as a water main break, occurs in the system.

The District of Squamish is working to ensure the proper installation of backflow prevention assemblies to mitigate the hazards associated with cross connections. A backflow prevention assembly is a series of "one-way" valves that only allow water to flow in the desired direction and physically impede reverse flow conditions.

5.2 Well Protection Plan

The Powerhouse Springs Well Protection Plan (WPP) was developed in 2014 by Piteau Associates Engineering LTD. The Well Protection Plan can be found on the District's website. This plan follows the Province of BC "Well Protection Toolkit" which includes defining the well protection area, identifying potential contaminants, developing management strategies and contingency plans, and finally, implementing, monitoring and evaluating the plan.

In accordance with the recommendations of the WPP, the District of Squamish has obtained a community watershed land tenure from the Province for the Powerhouse Springs aquifer, controls access to the PHS, Stawamus and Mashiter sources and watersheds via various gates and fences, and has installed signage at the Powerhouse Springs well field to inform road and trail users that they are travelling through the groundwater protection zone. In addition, District staff regularly monitor the water supply sources for activities with the potential to impact water quality and/or quantity.

5.3 Dead-End and Unidirectional Flushing Program

The utilities waterworks crew conducts an annual watermain flushing program to scour build-up and debris from water mains. The purpose of this program is to maintain water quality, distribution system capacity, and remove aged water.

A revised unidirectional flushing program was developed and implemented in 2024 in conjunction with the Districts water system modelling consultant. The new flushing program includes upgraded watermains and watermains added to the system by development. The revised flushing program now covers 100% of District watermain infrastructure. In 2024, 100% of the dead-end watermains were flushed.

5.4 Online Monitoring

District staff continuously monitor the operation of the water supply system using SCADA to monitor the water network in real-time. Collected data ranges from the well field pump output flow, chlorine concentrations in key areas of the distribution system, rainfall accumulation data, reservoir levels, PRV pressures, etc. Alarms are generated if control point values go below minimum or above maximum thresholds, if equipment fault codes are registered or if network connectivity with remote sites is lost. The SCADA system allows for operational optimization by automatically controlling variables such as reservoir levels and pump outputs to ensure that water is available to meet demand and, in some cases, allows for remote operator intervention.

As required in the District's Permit to Operate, surface water sources are monitored for turbidity at both the Stawamus River and Mashiter Creek using online analyzers. If a backup surface water source were to be used, the chlorine levels would also be measured by on-line analyzers and recorded by the SCADA system after chlorine is added to the water entering the distribution system.

5.5 Long-Term Water Supply Strategy

The District of Squamish – Water Master Plan revision was adopted by Council in December 2024. The Water Master Plan can be found on the District's website. This report analyzed the District's existing water system, estimated future demands to the year 2041, and provided recommendations for long-term sustainability. Recommendations identified in the Water Master Plan include a long-term source development strategy, a water meter implementation strategy, a water conservation plan, a watermain renewal program, and recommendations for Developer Cost Charge (DCC) projects.

Under current growth projections, the existing water source capacity at the Powerhouse Springs Well field will be able to service the District beyond 2041. When demand approaches the current water source capacity, the District has several options to provide additional water supply. Future upgrades to Powerhouse Springs, including a new chlorine injection kiosk, a new back-up emergency power generator and a new water supply well are included in the District's 5-year Financial Plan. In 2024, two additional reservoirs were added to the system at the current Lower University location. These two reservoirs increase the storage capacity of the system by 4 million liters in order to equalize and service growing system demands.

Although the Stawamus River and Mashiter Creek used to be the primary supply of potable water to the District prior to the development of the Powerhouse Springs well field, they are now only maintained for back-up and emergency purposes. Resuming their use as a primary source would require expensive capital upgrades to provide surface water treatment that meets current regulations and the associated ongoing maintenance costs.

5.5.1 Water Conservation

An important factor considering the rate of growth of the community and aging infrastructure is the need to reduce per capita water consumption to assist in maintaining adequate water supply while reducing the substantial costs associated with building the required infrastructure to increase production and conveyance capacity. Outdoor water use is the primary target for reduction. In 2024 the total combined average day demand per capita was 421 L/c/d. This value represents a 8% decrease over the previous year, and a 20% decrease since 2015. The District remains on track with the District's Water Conservation Plan reduction target of 1.0 L/c/d each year from 2014 to 2030.

As part of the 2024 Water Master Plan update, there were updates to the Districts water conservation program, which will reduce stress on the system as demand increases. The target of the updated water conservation plan is to reduce per capita water demand by 20%. Key strategies in the updated plan include enhanced metering systems, modernized leak detection techniques, bylaw revisions, infrastructure improvements, and the implementation of conservation-focused rate structures. Collectively, these initiatives demonstrate a strong commitment to the long-term sustainability and efficient management of the District’s water resources.

5.5.2 Water Metering

All new ICI and multi-family buildings are required to have a water meter included in their construction. A water rate study is being completed with the updates to the District’s Water Master Plan. Additionally, meter setters are being installed at all single-family connections when services are upgraded or replaced.

5.6 Emergency Response and Contingency Plan

As per the requirements set out in the Districts’ Permit to Operate, the District of Squamish reviews and submits updates to the Water System – Emergency Response and Contingency Plan (ERCP) annually. This document provides guidelines for action that will be taken by District staff in the event of an emergency.

The document outlines general actions that will be taken in the event there is a threat to the quality of drinking water and requires that VCH’s Drinking Water Officer (DWO) be kept informed. During an emergency, the DWO and other health authority staff will provide advice about public notification and monitoring of water quality, however the District of Squamish Communications Department will take the lead role as spokesperson for media inquiries and releases.

6.0 Significant Events & Public Notification

On June 5, 2024, a water leak occurred when a grounding rod punctured a 200mm water main exiting the lower University Pump station. The District responded by shutting off water service to isolate the leak and prevent further water loss. During the investigation and repairs, the University neighborhood was placed under Stage 4 water restrictions, with residents notified through door-to-door outreach by District staff. A temporary overland pumping system was set up to maintain water supply. However, due to the water main's location beneath a 10m tall lock-block wall, direct repairs were deemed unfeasible. To resolve this, the pump skid was modified, a new water main was installed in the driveway, and the damaged section of water main was abandoned. The process, including installation, chlorination, and tie-in, took several weeks to complete.

Fortis BC began constructing a major natural gas pipeline project from Burnaby to Squamish in 2023. Fortis BC has begun upgrading the Mamquam FSR to support the pipeline construction project they are working on which is located near the District of Squamish water transmission infrastructure. The District's Engineering and Public Works teams are working closely with Fortis BC representatives for the project to mitigate conflicts and protect the water supply and distribution system.

In close proximity to the Fortis work on Mamquam FSR, the Sea to Sky Gondola completed construction of a 25kV transmission line to service the gondola summit. The new powerlines fall within the Stawamus River watershed, Engineering and Public Works teams are monitoring for any changes within the watershed and are in close contact with Sea to Sky Gondola staff if any issues arise.

In addition, a tourism related project, Squamish Canyon, has also begun construction near Powerhouse Springs. The District's water transmission mains are buried within Powerhouse Springs Road and near the road bridge over the Mamquam river that carries the District's water transmission pipeline. The District's Engineering and Public Works teams are working closely with the developer of the project to mitigate conflicts and protect the water supply and distribution system.

In December 2024 issues with the flow meter measuring total flow out of Powerhouse Springs began to malfunction. This led to false, very low total flow measurements causing issues with chloring injection via the SCADA system. DoS staff addressed the issue to ensure correct chlorine concentrations were delivered. The District used a work around to ensure proper quantification of water consumption is being completed. The failed flow meter will be replaced in 2025.

6.1 Drinking Water Advisory/Boil Water Advisory

In 2024 the District of Squamish did not issue any boil water or drinking water advisories.

7.0 Operator Qualifications and Training

In accordance with the Drinking Water Protection Regulation, under the Drinking Water Protection Act, staff working on the water system must have a minimum level of certification to match the facility classification and operators must be certified by the Environmental Operators Certification Program

(EOCP). This ensures that District staff are adequately trained to operate, maintain, and repair water supply and distribution systems to protect the safety and quality of drinking water.

The District of Squamish Water Distribution System is classified by the EOCP as a Class 3 facility (WD-III). The District of Squamish provides regular training opportunities to ensure staff maintain their certifications and supports its staff in achieving further education and training in their respective fields to provide the best service to its residents. Environmental Operators Certifications for Water Distribution held for the District of Squamish in 2024 are shown in Table 2.

Table 2. EOCP Certified District Staff

Level of Certification	Water Distribution
Operator in Training	0
Level 1	2
Level 2	3
Level 3	2
Total	**7**

8.0 Closing

Residents of Squamish are fortunate to have access to a plentiful high-quality supply of groundwater from the Ring Creek Aquifer as the primary source for drinking water.

In 2024 the District of Squamish met all the conditions set out by VCH in the Districts' Permit to Operate. Bacteriological sampling was completed weekly and met the potable water quality standards set out by the BC Drinking Water Protection Act and Regulation. The cross-connection control program, well protection plan, and flushing programs were all carried out as outlined in the conditions of the District's Permit to Operate. The SCADA system continues to monitor the water distribution system in real-time, and the District of Squamish has a long-term water supply strategy in place. Additionally, the District maintains an up-to-date Emergency Response and Contingency Plan to guide its response during emergency events.

The District continues to work to maintain, replace, and upgrade existing infrastructure, and to integrate operations and maintenance of new infrastructure, while reducing the overall demand on the system through the water conservation program and ongoing implementation of a water metering program. Overall, the District of Squamish is proud of the water it delivers to its customers and residents and will continue to strive for the highest quality service.

Appendix A - Permit to Operate

Vancouver CoastalHealth
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HEALTH PROTECTION

PERMIT TO OPERATE

A Water Supply System

Purveyor: District Of Squamish
Facility Name: District Of Squamish Waterworks

Conditions of Permit

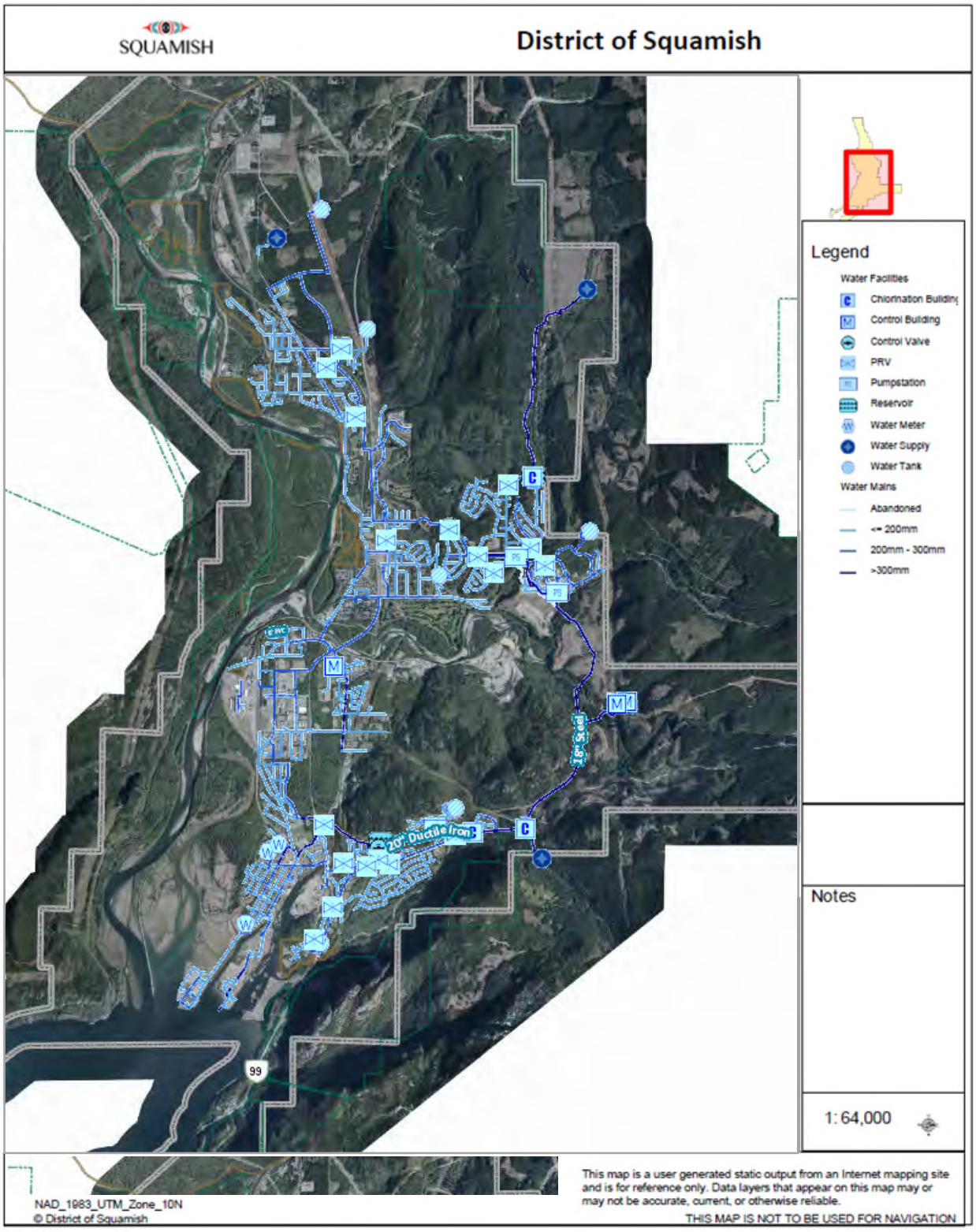
Minimum bacteriological sampling frequency is 20 / month (distribution).
Test for physical and chemical parameters in accordance with your monitoring plan.
Operate in accordance with your Cross-Connection Control Program.
Implement your Well Protection Plan.
Maintain your Unidirectional Flushing Program annually
Maintain continuous on-line monitoring of the water disinfection process.
Maintain continuous on-line turbidity sampling for each surface water source.
Review and update the Emergency Response and Contingency Plan annually.

May 21, 1997
Effective Date
June 29, 2021
Revised Date

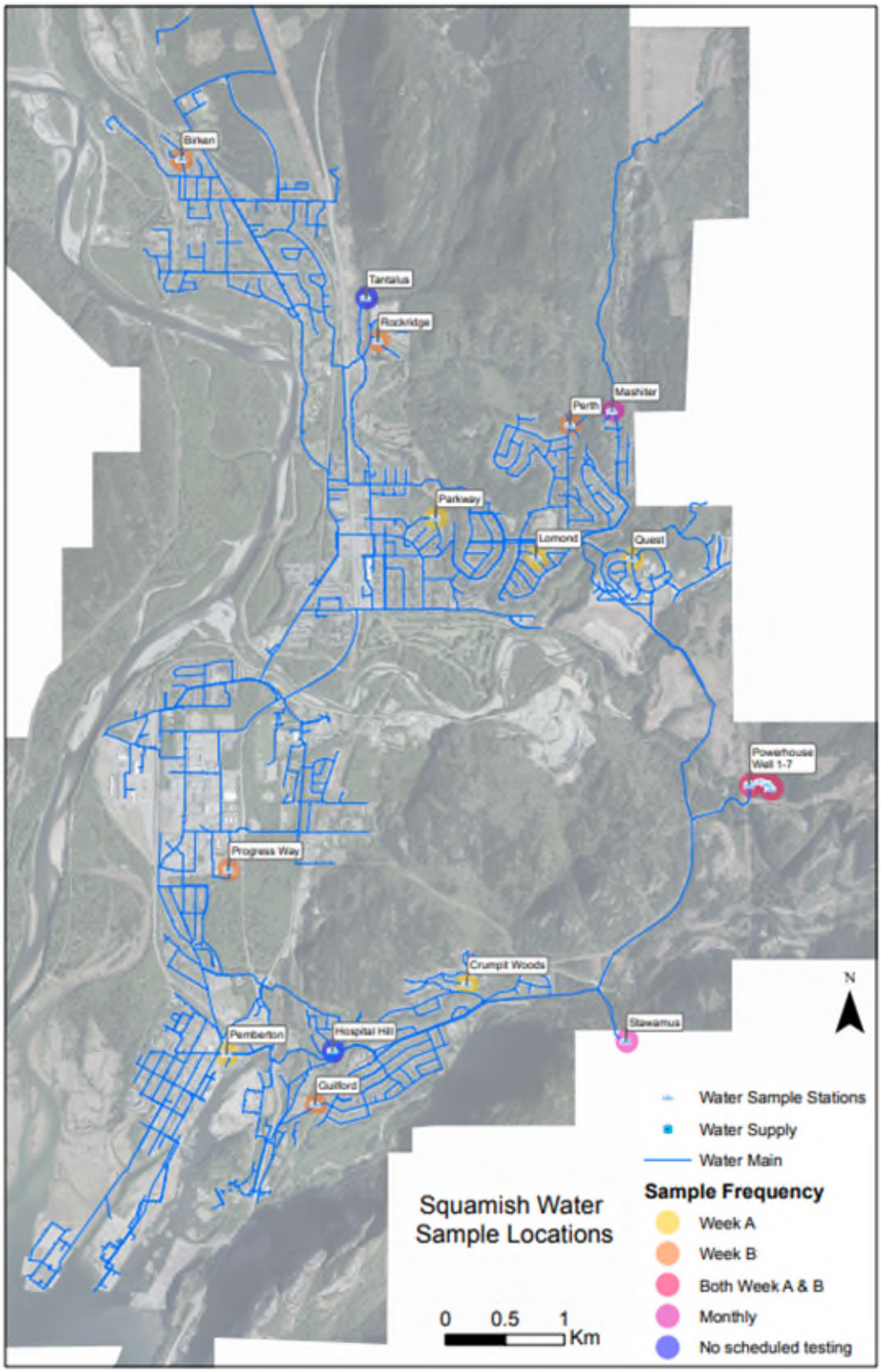
Drinking Water Officer

This permit must be displayed in a conspicuous place and is not transferable

Appendix B - District of Squamish Water Distribution Map



Appendix C - Water Sample Station Locations



Appendix D - VCH Advice re Lead in Drinking Water

Vancouver CoastalHealth
Promoting wellness. Ensuring care.

Office of the Chief Medical Health Officer
800, 601 West Broadway
Vancouver, BC V5Z 4C2
Tel: 604.675.3900 Toll free 1.855.675.3900
Fax: 604.731.2756

Lead in Drinking Water

Lead is harmful to human health. Health impacts include effects on neurological development and behaviour in children and increased blood pressure and kidney issues in adults. Lead exposure can impact the health of everyone, but lead is more of a risk for pregnant women and young children because infants and children absorb lead more easily than adults and are more susceptible to its harmful effects, such as effects on behaviour and intelligence. The public's overall exposure to lead has decreased over the years as some major sources of lead have been eliminated. However building plumbing systems can still be a source of lead for people consuming the water (in addition to other sources such as food, soil, paint and dust). When there is a risk of lead being present in a buildings water system, steps can be taken to reduce exposure to lead from the drinking water.

What is a safe level?

Health Canada has reduced the maximum acceptable concentration of lead in drinking water to 5 parts per billion while at the same stating that lead levels should be as low as reasonably achievable. There is no known safe level of lead exposure.

What can I do?

The BC Ministry of Health document titled *Lead in Drinking Water* provides details on the issue and steps that can be taken to reduce lead levels in your drinking water:

https://www.healthlinkbc.ca/hlbc/files/documents/healthfiles/hfile49e.pdf

Health Canada's document titled: *Drinking water: what about lead?* provides similar details as well as a good description of the sources of lead within a building's plumbing system:

https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/ewh-semt/alt_formats/pdf/pubs/what-about-lead/drinking-water-lead-eng.pdf

Water in Daycares and Homes with Infants

Infants are vulnerable to the effects of lead exposure, and could be highly exposed if they are consuming formula made with tap water from a building plumbing system with lead. Reduction of lead levels by flushing water lines may not be enough to adequately reduce the risk to infants. Additional steps such as the use of filters capable of removing lead or an alternate water source known to be lead free may be required to adequately mitigate the risks.

For licenced daycares VCH staff will work with facility operators to ensure that lead removal procedures are being employed and managed properly.

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Office of the Chief Medical Health Officer
800, 601 West Broadway
Vancouver, BC V5Z 4C2
Tel: 604.675.3900 Toll free 1.855.675.3900
Fax: 604.731.2756

Testing in schools

Drinking water testing for lead is required in school buildings.
For more details see the Ministry of Education & Training website:

https://www2.gov.bc.ca/gov/content/education-training/k-12/administration/legislation-policy/public-schools/testing-lead-content-in-drinking-water?keyword=lead&keyword=testing

Additional Resources

Health Canada's Water Talk - The guideline for lead in drinking water:

https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/water-talk-minimizing-exposure-lead-drinking-water-distribution-systems.html#s5

Guidelines for Canadian Drinking Water Quality: Guideline Technical Document – Lead:

https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidelines-canadian-drinking-water-quality-guideline-technical-document-lead.html

Canadian water & Wastewater Association - Fact Sheet on LEAD (Pb)

http://www.cwwa.ca/pdf_files/CWWA_Lead%20_Facts_2019.pdf

Contact information for Vancouver Coastal Health Environmental Health:

Area	Phone Number
Central Coast	604-983-6700
North Vancouver	604-983-6700
Powell River	604-485-3310
Richmond	604-233-3147
Sechelt	604-885-5164
Squamish	604-892-2293
Vancouver	604-675-3800
Whistler	604-932-3202

Appendix E - Weekly Water Sample Results

Sample Range Report

Vancouver Coastal Health

Facility Name: District Of Squamish Waterworks
Date Range: Jan 1 2024 to Dec 31 2024

Operator
Ben Kineshanko
Box 310
Squamish, BC V8B 0A3

Sampling Site	Date Collected	Total Coliform	E. Coli	Fecal Coliform
Lomond Sample Station, Garibaldi Highlands				
	1/8/2024 8:49:00 AM	LT1	LT1	
	1/22/2024 6:31:00 AM	LT1	LT1	
	2/6/2024 6:55:00 AM	LT1	LT1	
	2/20/2024 6:42:00 AM	LT1	LT1	
	3/4/2024 7:01:00 AM	LT1	LT1	
	3/18/2024 8:23:00 AM	LT1	LT1	
	4/2/2024 6:54:00 AM	LT1	LT1	
	4/16/2024 8:10:00 AM	LT1	LT1	
	4/29/2024 8:44:00 AM	LT1	LT1	
	5/13/2024 6:42:00 AM	LT1	LT1	
	5/27/2024 6:22:00 AM	LT1	LT1	
	6/10/2024 9:32:00 AM	LT1	LT1	
	6/24/2024 9:22:00 AM	LT1	LT1	
	7/8/2024 8:25:00 AM	LT1	LT1	
	7/22/2024 6:52:00 AM	LT1	LT1	
	8/6/2024 8:35:00 AM	LT1	LT1	
	8/19/2024 9:10:00 AM	LT1	LT1	
	9/3/2024 8:30:00 AM	LT1	LT1	
	10/1/2024 7:10:00 AM	LT1	LT1	
	10/15/2024 6:50:00 AM	LT1	LT1	
	10/29/2024 7:45:00 AM	LT1	LT1	
	11/12/2024 9:00:00 AM	LT1	LT1	
	11/26/2024 6:25:00	LT1	LT1	

	AM		
	12/16/2024 11:15:00 AM	LT1	LT1
	Total Positive:	**0**	**0**
Guilford sample station, East of Guilford & Valley Dr.			
	1/3/2024 9:55:00 AM	LT1	LT1
	1/16/2024 7:18:00 AM	LT1	LT1
	1/29/2024 8:22:00 AM	LT1	LT1
	2/12/2024 8:00:00 AM	LT1	LT1
	2/26/2024 7:54:00 AM	LT1	LT1
	3/11/2024 7:45:00 AM	LT1	LT1
	3/25/2024 8:31:00 AM	LT1	LT1
	4/8/2024 8:03:00 AM	LT1	LT1
	4/22/2024 8:30:00 AM	LT1	LT1
	5/6/2024 8:48:00 AM	LT1	LT1
	5/21/2024 8:00:00 AM	LT1	LT1
	6/3/2024 9:28:00 AM	LT1	LT1
	6/17/2024 10:24:00 AM	LT1	LT1
	7/2/2024 8:57:00 AM	LT1	LT1
	7/15/2024 8:44:00 AM	LT1	LT1
	7/29/2024 10:22:00 AM	LT1	LT1
	8/12/2024 11:03:00 AM	LT1	LT1
	8/26/2024 10:48:00 AM	LT1	LT1
	9/9/2024 11:01:00 AM	LT1	LT1
	9/23/2024 9:47:00 AM	LT1	LT1
	10/7/2024 8:34:00 AM	LT1	LT1
	11/4/2024 11:05:00 AM	LT1	LT1
	11/18/2024 9:56:00 AM	LT1	LT1
	12/2/2024 11:17:00 AM	LT1	LT1
	12/16/2024 9:48:00 AM	LT1	LT1
	Total Positive:	**0**	**0**

Quest University, University Lands			
	1/8/2024 8:50:00 AM	LT1	LT1
	1/22/2024 6:45:00 AM	LT1	LT1
	2/6/2024 6:36:00 AM	LT1	LT1
	2/20/2024 7:00:00 AM	LT1	LT1
	3/4/2024 7:16:00 AM	LT1	LT1
	3/18/2024 9:18:00 AM	LT1	LT1
	4/2/2024 7:06:00 AM	LT1	LT1
	4/16/2024 8:00:00 AM	LT1	LT1
	4/29/2024 8:59:00 AM	LT1	LT1
	5/13/2024 6:55:00 AM	LT1	LT1
	5/27/2024 6:35:00 AM	LT1	LT1
	6/10/2024 9:42:00 AM	LT1	LT1
	6/24/2024 9:07:00 AM	LT1	LT1
	7/8/2024 8:40:00 AM	LT1	LT1
	7/22/2024 7:03:00 AM	LT1	LT1
	8/6/2024 8:25:00 AM	LT1	LT1
	8/19/2024 9:00:00 AM	LT1	LT1
	9/3/2024 6:53:00 AM	LT1	LT1
	10/1/2024 6:55:00 AM	LT1	LT1
	10/15/2024 6:42:00 AM	LT1	LT1
	10/29/2024 7:32:00 AM	LT1	LT1
	11/12/2024 8:45:00 AM	LT1	LT1
	11/26/2024 6:35:00 AM	LT1	LT1
	12/9/2024 8:43:00 AM	LT1	LT1
	12/16/2024 10:55:00 AM	LT1	LT1
	Total Positive:	**0**	**0**
Rockridge sample station, across from 41215-Rockridge Pl.			
	1/3/2024 7:10:00 AM	LT1	LT1
	1/16/2024 11:20:00	LT1	LT1

	AM		
	1/29/2024 6:56:00 AM	LT1	LT1
	2/12/2024 6:57:00 AM	LT1	LT1
	2/26/2024 6:47:00 AM	LT1	LT1
	3/11/2024 6:45:00 AM	LT1	LT1
	3/25/2024 6:53:00 AM	LT1	LT1
	4/8/2024 6:52:00 AM	LT1	LT1
	4/22/2024 7:36:00 AM	LT1	LT1
	5/6/2024 7:52:00 AM	LT1	LT1
	5/21/2024 7:05:00 AM	LT1	LT1
	6/3/2024 8:32:00 AM	LT1	LT1
	6/17/2024 9:06:00 AM	LT1	LT1
	7/2/2024 8:00:00 AM	LT1	LT1
	7/15/2024 7:03:00 AM	LT1	LT1
	7/29/2024 9:14:00 AM	LT1	LT1
	8/12/2024 9:53:00 AM	LT1	LT1
	8/26/2024 9:44:00 AM	LT1	LT1
	9/9/2024 10:01:00 AM	LT1	LT1
	9/16/2024 9:00:00 AM	LT1	LT1
	9/23/2024 10:37:00 AM	LT1	LT1
	10/7/2024 6:53:00 AM	LT1	LT1
	10/21/2024 9:17:00 AM	LT1	LT1
	11/12/2024 10:15:00 AM	LT1	LT1
	11/18/2024 8:55:00 AM	LT1	LT1
	12/2/2024 10:30:00 AM	LT1	LT1
	12/16/2024 10:26:00 AM	LT1	LT1
	Total Positive:	**0**	**0**
41974 Birken Rd, Brackendale			
	1/3/2024 6:35:00 AM	LT1	LT1
	1/17/2024 6:43:00 AM	LT1	LT1

	1/29/2024 6:30:00 AM	LT1	LT1
	2/12/2024 6:32:00 AM	LT1	LT1
	2/26/2024 6:20:00 AM	LT1	LT1
	3/11/2024 6:14:00 AM	LT1	LT1
	3/25/2024 6:31:00 AM	LT1	LT1
	4/8/2024 6:25:00 AM	LT1	LT1
	4/22/2024 7:20:00 AM	LT1	LT1
	5/6/2024 7:30:00 AM	LT1	LT1
	5/21/2024 6:40:00 AM	LT1	LT1
	6/3/2024 7:41:00 AM	LT1	LT1
	6/17/2024 8:48:00 AM	LT1	LT1
	7/2/2024 7:33:00 AM	LT1	LT1
	7/15/2024 6:33:00 AM	LT1	LT1
	7/29/2024 8:43:00 AM	LT1	LT1
	8/12/2024 9:34:00 AM	LT1	LT1
	8/26/2024 9:24:00 AM	LT1	LT1
	9/9/2024 9:38:00 AM	LT1	LT1
	9/16/2024 8:39:00 AM	LT1	LT1
	9/23/2024 8:31:00 AM	LT1	LT1
	10/7/2024 6:31:00 AM	LT1	LT1
	10/21/2024 8:25:00 AM	LT1	LT1
	11/4/2024 9:57:00 AM	LT1	LT1
	11/18/2024 8:27:00 AM	LT1	LT1
	12/2/2024 10:46:00 AM	LT1	LT1
	12/16/2024 11:33:00 AM	LT1	LT1
	Total Positive:	**0**	**0**

Parkway Sample station, 40464 Park Crescent			
	1/8/2024 9:04:00 AM	LT1	LT1
	1/22/2024 6:14:00 AM	LT1	LT1
	2/6/2024 7:10:00 AM	LT1	LT1

	2/20/2024 6:18:00 AM	LT1	LT1
	3/4/2024 7:58:00 AM	LT1	LT1
	3/18/2024 8:32:00 AM	LT1	LT1
	4/2/2024 7:28:00 AM	LT1	LT1
	4/16/2024 8:50:00 AM	LT1	LT1
	4/29/2024 9:12:00 AM	LT1	LT1
	5/13/2024 6:22:00 AM	LT1	LT1
	5/27/2024 6:52:00 AM	LT1	LT1
	6/10/2024 8:36:00 AM	LT1	LT1
	6/24/2024 8:41:00 AM	LT1	LT1
	7/8/2024 8:10:00 AM	LT1	LT1
	7/22/2024 6:35:00 AM	LT1	LT1
	8/6/2024 8:45:00 AM	LT1	LT1
	8/19/2024 7:40:00 AM	LT1	LT1
	9/3/2024 7:11:00 AM	LT1	LT1
	9/16/2024 10:25:00 AM	LT1	LT1
	10/1/2024 7:20:00 AM	LT1	LT1
	10/15/2024 7:02:00 AM	LT1	LT1
	10/29/2024 7:17:00 AM	LT1	LT1
	11/12/2024 8:29:00 AM	LT1	LT1
	11/26/2024 6:15:00 AM	LT1	LT1
	12/9/2024 9:15:00 AM	LT1	LT1
	12/16/2024 10:41:00 AM	LT1	LT1
	Total Positive:	**0**	**0**

Perth Sample Station, Garibaldi Highlands			
	1/3/2024 7:30:00 AM	LT1	LT1
	1/29/2024 7:16:00 AM	LT1	LT1
	2/12/2024 7:15:00 AM	LT1	LT1
	2/26/2024 7:14:00 AM	LT1	LT1
	3/11/2024 7:05:00	LT1	LT1

	AM		
	3/25/2024 7:19:00 AM	LT1	LT1
	4/8/2024 7:25:00 AM	LT1	LT1
	4/22/2024 7:53:00 AM	LT1	LT1
	5/6/2024 8:11:00 AM	LT1	LT1
	5/21/2024 7:25:00 AM	LT1	LT1
	6/3/2024 8:52:00 AM	LT1	LT1
	6/17/2024 9:24:00 AM	LT1	LT1
	7/2/2024 8:18:00 AM	LT1	LT1
	7/15/2024 7:32:00 AM	LT1	LT1
	7/29/2024 9:36:00 AM	LT1	LT1
	8/12/2024 10:22:00 AM	LT1	LT1
	8/26/2024 8:34:00 AM	LT1	LT1
	9/9/2024 10:34:00 AM	LT1	LT1
	9/16/2024 9:25:00 AM	LT1	LT1
	9/23/2024 8:50:00 AM	LT1	LT1
	10/7/2024 7:26:00 AM	LT1	LT1
	11/4/2024 10:30:00 AM	LT1	LT1
	11/18/2024 9:16:00 AM	LT1	LT1
	12/2/2024 10:13:00 AM	LT1	LT1
	12/16/2024 11:07:00 AM	LT1	LT1
	Total Positive:	**0**	**0**

Crumpet Woods sample station, 2252 Windsail Pl			
	1/8/2024 9:38:00 AM	LT1	LT1
	1/22/2024 8:42:00 AM	LT1	LT1
	2/6/2024 8:30:00 AM	LT1	LT1
	2/20/2024 7:43:00 AM	LT1	LT1
	3/4/2024 8:38:00 AM	LT1	LT1
	3/18/2024 9:40:00 AM	LT1	LT1
	4/2/2024 9:46:00 AM	LT1	LT1
	4/16/2024 9:27:00 AM	LT1	LT1

	4/29/2024 9:49:00 AM	LT1	LT1
	5/13/2024 7:50:00 AM	LT1	LT1
	5/27/2024 7:41:00 AM	LT1	LT1
	6/10/2024 10:58:00 AM	LT1	LT1
	6/24/2024 10:10:00 AM	LT1	LT1
	7/8/2024 6:50:00 AM	LT1	LT1
	7/22/2024 7:56:00 AM	LT1	LT1
	8/6/2024 9:40:00 AM	LT1	LT1
	8/19/2024 10:06:00 AM	LT1	LT1
	9/3/2024 9:13:00 AM	LT1	LT1
	9/16/2024 11:06:00 AM	LT1	LT1
	10/1/2024 10:25:00 AM	LT1	LT1
	10/15/2024 7:40:00 AM	LT1	LT1
	10/21/2024 12:00:00 PM	LT1	LT1
	10/29/2024 8:50:00 AM	LT1	LT1
	11/12/2024 10:00:00 AM	LT1	LT1
	11/26/2024 7:05:00 AM	LT1	LT1
	12/9/2024 9:55:00 AM	LT1	LT1
	12/16/2024 9:34:00 AM	LT1	LT1
	Total Positive:	**0**	**0**

Pemberton sample station, across from 1551 Pemberton Ave			
	1/8/2024 9:21:00 AM	LT1	LT1
	1/22/2024 7:14:00 AM	LT1	LT1
	2/6/2024 7:35:00 AM	LT1	LT1
	2/20/2024 7:23:00 AM	LT1	LT1
	3/4/2024 8:17:00 AM	LT1	LT1
	3/18/2024 8:53:00 AM	LT1	LT1
	4/2/2024 9:31:00 AM	LT1	LT1
	4/16/2024 9:00:00 AM	LT1	LT1
	4/29/2024 9:32:00 AM	LT1	LT1

	5/13/2024 7:31:00 AM	LT1	LT1
	5/27/2024 7:14:00 AM	LT1	LT1
	6/10/2024 10:42:00 AM	LT1	LT1
	6/24/2024 9:51:00 AM	LT1	LT1
	7/8/2024 6:25:00 AM	LT1	LT1
	7/22/2024 7:35:00 AM	LT1	LT1
	8/6/2024 9:09:00 AM	LT1	LT1
	8/19/2024 7:20:00 AM	LT1	LT1
	9/3/2024 8:30:00 AM	LT1	LT1
	9/16/2024 10:44:00 AM	LT1	LT1
	10/1/2024 8:30:00 AM	LT1	LT1
	10/15/2024 8:20:00 AM	LT1	LT1
	10/29/2024 8:06:00 AM	LT1	LT1
	11/12/2024 9:40:00 AM	LT1	LT1
	11/26/2024 6:50:00 AM	LT1	LT1
	12/9/2024 9:39:00 AM	LT1	LT1
	12/16/2024 9:59:00 AM	LT1	LT1
	Total Positive:	**0**	**0**
Progress Way sample station, 38917 Progress Way			
	1/3/2024 9:55:00 AM	LT1	LT1
	1/29/2024 7:37:00 AM	LT1	LT1
	2/12/2024 7:40:00 AM	LT1	LT1
	2/26/2024 7:36:00 AM	LT1	LT1
	3/11/2024 7:26:00 AM	LT1	LT1
	3/25/2024 8:11:00 AM	LT1	LT1
	4/8/2024 7:50:00 AM	LT1	LT1
	4/22/2024 8:19:00 AM	LT1	LT1
	5/6/2024 8:32:00 AM	LT1	LT1
	5/21/2024 7:45:00 AM	LT1	LT1
	6/3/2024 9:15:00 AM	LT1	LT1

6/17/2024 9:44:00 AM	LT1	LT1
7/2/2024 8:40:00 AM	LT1	LT1
7/15/2024 8:24:00 AM	LT1	LT1
7/29/2024 10:04:00 AM	LT1	LT1
8/12/2024 10:49:00 AM	LT1	LT1
8/26/2024 10:13:00 AM	LT1	LT1
9/23/2024 10:01:00 AM	LT1	LT1
10/7/2024 8:04:00 AM	LT1	LT1
10/21/2024 9:31:00 AM	LT1	LT1
11/4/2024 10:55:00 AM	LT1	LT1
11/18/2024 9:34:00 AM	LT1	LT1
12/2/2024 11:08:00 AM	LT1	LT1
12/16/2024 10:10:00 AM	LT1	LT1
Total Positive:	**0**	**0**

ad hoc Community Corrections Facility, 38077 2nd Avenue			
	8/28/2024 12:10:00 PM	LT1	LT1
	Total Positive:	**0**	**0**

Result Values: **E - estimated** **L - less than** **G - greater than**

Samples that contain total coliform:	0	0.00% of total
Samples that contain e. coli:	0	0.00% of total
Samples that contain fecal coliform:	0	0.00% of total
Number of consecutive samples that contain total coliform:	0	
Number of samples that contain total coliform in last 30 days:	0/0	
Total number of samples:	257	

Comments:

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Environmental Health Officer
Jan 22 2025

FOR FURTHER INFORMATION PLEASE CALL: Dan Glover (604) 892-2293

Sample Range Report

Vancouver Coastal Health

Facility Name: Powerhouse Springs Well Field
Date Range: Jan 1 2024 to Dec 31 2024

Operator

,

Sampling Site	Date Collected	Total Coliform	E. Coli	Fecal Coliform
Powerhouse Springs Wells Site, Powerhouse Springs				
	1/3/2024 10:20:00 AM	LT1	LT1	
	1/8/2024 10:10:00 AM	LT1	LT1	
	1/16/2024 6:50:00 AM	LT1	LT1	
	1/22/2024 9:20:00 AM	LT1	LT1	
	1/29/2024 9:02:00 AM	LT1	LT1	
	2/6/2024 8:50:00 AM	LT1	LT1	
	2/12/2024 8:41:00 AM	LT1	LT1	
	2/20/2024 8:40:00 AM	LT1	LT1	
	2/26/2024 9:05:00 AM	LT1	LT1	
	3/4/2024 9:24:00 AM	LT1	LT1	
	3/11/2024 8:55:00 AM	LT1	LT1	
	3/18/2024 9:57:00 AM	LT1	LT1	
	3/25/2024 8:54:00 AM	LT1	LT1	
	4/2/2024 10:14:00 AM	LT1	LT1	
	4/8/2024 8:48:00 AM	LT1	LT1	
	4/16/2024 10:20:00 AM	LT1	LT1	
	4/22/2024 9:00:00 AM	LT1	LT1	
	4/29/2024 10:09:00 AM	LT1	LT1	
	5/6/2024 9:50:00 AM	LT1	LT1	
	5/13/2024 8:41:00 AM	LT1	LT1	
	5/21/2024 7:42:00 AM	LT1	LT1	

5/27/2024 8:24:00 AM	LT1	LT1
6/3/2024 10:17:00 AM	LT1	LT1
6/10/2024 11:19:00 AM	LT1	LT1
6/17/2024 10:40:00 AM	LT1	LT1
6/24/2024 10:37:00 AM	LT1	LT1
7/2/2024 10:00:00 AM	LT1	LT1
7/8/2024 7:27:00 AM	LT1	LT1
7/15/2024 9:21:00 AM	LT1	LT1
7/22/2024 8:52:00 AM	LT1	LT1
7/29/2024 10:53:00 AM	LT1	LT1
8/6/2024 10:19:00 AM	LT1	LT1
8/12/2024 9:34:00 AM	LT1	LT1
8/19/2024 10:26:00 AM	LT1	LT1
8/26/2024 11:08:00 AM	LT1	LT1
9/3/2024 9:35:00 AM	LT1	LT1
9/9/2024 11:22:00 AM	LT1	LT1
9/16/2024 11:27:00 AM	LT1	LT1
9/23/2024 9:00:00 AM	LT1	LT1
10/1/2024 10:51:00 AM	LT1	LT1
10/7/2024 9:13:00 AM	LT1	LT1
10/15/2024 8:08:00 AM	LT1	LT1
10/21/2024 10:13:00 AM	LT1	LT1
10/29/2024 9:15:00 AM	LT1	LT1
11/12/2024 10:30:00 AM	LT1	LT1
11/18/2024 10:27:00 AM	LT1	LT1
11/26/2024 7:30:00 AM	LT1	LT1
12/2/2024 11:37:00 AM	LT1	LT1
12/9/2024 10:20:00 AM	LT1	LT1
12/16/2024 8:54:00	LT1	LT1

	AM		
Total Positive:		**0**	**0**

Result Values:	**E - estimated**	**L - less than**	**G - greater than**

Samples that contain total coliform:	0	0.00% of total
Samples that contain e. coli:	0	0.00% of total
Samples that contain fecal coliform:	0	0.00% of total
Number of consecutive samples that contain total coliform:	0	
Number of samples that contain total coliform in last 30 days:	0/0	
Total number of samples:	50	

Comments:

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Environmental Health Officer
Jan 22 2025

FOR FURTHER INFORMATION PLEASE CALL: Dan Glover (604) 892-2293

Sample Range Report

Vancouver Coastal Health

Facility Name: Powerhouse Springs Well Field
Date Range: Jan 1 2024 to Dec 31 2024

Operator

,

Sampling Site	Date Collected	Total Coliform	E. Coli	Fecal Coliform
Powerhouse Springs Wells Site, Powerhouse Springs	1/3/2024 10:20:00 AM	LT1	LT1	
	1/8/2024 10:10:00 AM	LT1	LT1	
	1/16/2024 6:50:00 AM	LT1	LT1	
	1/22/2024 9:20:00 AM	LT1	LT1	
	1/29/2024 9:02:00 AM	LT1	LT1	
	2/6/2024 8:50:00 AM	LT1	LT1	
	2/12/2024 8:41:00 AM	LT1	LT1	
	2/20/2024 8:40:00 AM	LT1	LT1	
	2/26/2024 9:05:00 AM	LT1	LT1	
	3/4/2024 9:24:00 AM	LT1	LT1	
	3/11/2024 8:55:00 AM	LT1	LT1	
	3/18/2024 9:57:00 AM	LT1	LT1	
	3/25/2024 8:54:00 AM	LT1	LT1	
	4/2/2024 10:14:00 AM	LT1	LT1	
	4/8/2024 8:48:00 AM	LT1	LT1	
	4/16/2024 10:20:00 AM	LT1	LT1	
	4/22/2024 9:00:00 AM	LT1	LT1	
	4/29/2024 10:09:00 AM	LT1	LT1	
	5/6/2024 9:50:00 AM	LT1	LT1	
	5/13/2024 8:41:00 AM	LT1	LT1	
	5/21/2024 7:42:00 AM	LT1	LT1	

5/27/2024 8:24:00 AM	LT1	LT1
6/3/2024 10:17:00 AM	LT1	LT1
6/10/2024 11:19:00 AM	LT1	LT1
6/17/2024 10:40:00 AM	LT1	LT1
6/24/2024 10:37:00 AM	LT1	LT1
7/2/2024 10:00:00 AM	LT1	LT1
7/8/2024 7:27:00 AM	LT1	LT1
7/15/2024 9:21:00 AM	LT1	LT1
7/22/2024 8:52:00 AM	LT1	LT1
7/29/2024 10:53:00 AM	LT1	LT1
8/6/2024 10:19:00 AM	LT1	LT1
8/12/2024 9:34:00 AM	LT1	LT1
8/19/2024 10:26:00 AM	LT1	LT1
8/26/2024 11:08:00 AM	LT1	LT1
9/3/2024 9:35:00 AM	LT1	LT1
9/9/2024 11:22:00 AM	LT1	LT1
9/16/2024 11:27:00 AM	LT1	LT1
9/23/2024 9:00:00 AM	LT1	LT1
10/1/2024 10:51:00 AM	LT1	LT1
10/7/2024 9:13:00 AM	LT1	LT1
10/15/2024 8:08:00 AM	LT1	LT1
10/21/2024 10:13:00 AM	LT1	LT1
10/29/2024 9:15:00 AM	LT1	LT1
11/12/2024 10:30:00 AM	LT1	LT1
11/18/2024 10:27:00 AM	LT1	LT1
11/26/2024 7:30:00 AM	LT1	LT1
12/2/2024 11:37:00 AM	LT1	LT1
12/9/2024 10:20:00 AM	LT1	LT1
12/16/2024 8:54:00	LT1	LT1

	AM		
Total Positive:		**0**	**0**

Result Values:	**E - estimated**	**L - less than**	**G - greater than**

Samples that contain total coliform:	0	0.00% of total
Samples that contain e. coli:	0	0.00% of total
Samples that contain fecal coliform:	0	0.00% of total
Number of consecutive samples that contain total coliform:	0	
Number of samples that contain total coliform in last 30 days:	0/0	
Total number of samples:	50	

Comments:

_____
Environmental Health Officer
Jan 22 2025

FOR FURTHER INFORMATION PLEASE CALL: Dan Glover (604) 892-2293

Appendix F - Semi Annual Physical and Chemical Analysis

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **VA24B3864**	Page	: 1 of 6
Client	: **District of Squamish**	Laboratory	: ALS Environmental - Vancouver
Contact	: Craig Halliday	Account Manager	: Ian Chen
Address	: 39907 Government Road PO Box 310 Squamish BC Canada V8B 0A3	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 815 6864	Telephone	: +1 604 253 4188
Project	: ----	Date Samples Received	: 13-Jun-2024 12:30
PO	: 503472	Date Analysis Commenced	: 14-Jun-2024
C-O-C number	: ----	Issue Date	: 26-Jun-2024 12:17
Sampler	: BM		
Site	: ----		
Quote number	: VA23-DOSQ100-002		
No. of samples received	: 5		
No. of samples analysed	: 5		

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.

Signatories	*Position*	*Laboratory Department*
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Leon Yang	Analyst	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Inorganics, Burnaby, British Columbia
Nik Perkio	Senior Analyst	Inorganics, Waterloo, Ontario
Robin Weeks	Team Leader - Metals	Inorganics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Sam Silveira	Analyst	Metals, Burnaby, British Columbia
Sanja Risticevic	Department Manager - LCMS	LCMS, Waterloo, Ontario
Stephanie Pinheiro	Team Leader - LCMS	LCMS, Waterloo, Ontario

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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*
µg/L	micrograms per litre
µS/cm	microsiemens per centimetre
CU	colour units (1 cu = 1 mg/l pt)
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	Powerhouse Springs	Gilford	Tantalus	Birken	Parkaway
				Client sampling date / time	13-Jun-2024 08:30	13-Jun-2024 07:45	13-Jun-2024 07:00	13-Jun-2024 06:40	13-Jun-2024 07:15
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24B3864-001	VA24B3864-002	VA24B3864-003	VA24B3864-004	VA24B3864-005
					Result	Result	Result	Result	Result
Physical Tests									
Colour, true	----	E329/VA	5.0	CU	<5.0	----	----	----	----
Conductivity	----	E100/VA	2.0	µS/cm	77.5	----	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L	23.1	----	----	----	----
pH	----	E108/VA	0.10	pH units	7.64	----	----	----	----
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L	76	----	----	----	----
Turbidity	----	E121/VA	0.10	NTU	<0.10	----	----	----	----
Alkalinity, total (as CaCO3)	----	E290/VA	2.0	mg/L	22.7	----	----	----	----
Anions and Nutrients									
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L	<0.0050	----	----	----	----
Bromide	24959-67-9	E235.Br-L/VA	0.050	mg/L	<0.050	----	----	----	----
Chloride	16887-00-6	E235.Cl/VA	0.50	mg/L	4.55	----	----	----	----
Fluoride	16984-48-8	E235.F/VA	0.020	mg/L	0.091	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318/VA	0.050	mg/L	<0.050	----	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	0.0050	mg/L	0.0609	----	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	0.0010	mg/L	<0.0010	----	----	----	----
Nitrogen, total	7727-37-9	E366/VA	0.030	mg/L	0.056	----	----	----	----
Phosphorus, total	7723-14-0	E372-U/VA	0.0020	mg/L	0.0375	----	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	0.30	mg/L	8.10	----	----	----	----
Cyanides									
Cyanide, strong acid dissociable (Total)	----	E333/WT	0.0050	mg/L	<0.0050	----	----	----	----
Organic / Inorganic Carbon									
Carbon, total organic [TOC]	----	E355-L/VA	0.50	mg/L	<0.50	----	----	----	----
Inorganics									
Chlorite	14998-27-7	E409.CLO2/WT	0.010	mg/L	<0.010	----	----	----	----
Total Metals									
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L	<0.0030	----	----	----	----
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L	<0.00010	----	----	----	----

.

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	Powerhouse Springs	Gilford	Tantalus	Birken	Parkaway
					Client sampling date / time	13-Jun-2024 08:30	13-Jun-2024 07:45	13-Jun-2024 07:00	13-Jun-2024 06:40	13-Jun-2024 07:15
						VA24B3864-001	VA24B3864-002	VA24B3864-003	VA24B3864-004	VA24B3864-005
						Result	Result	Result	Result	Result
Total Metals										
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L		0.00065	----	----	----	----
Barium, total	7440-39-3	E420/VA	0.00010	mg/L		0.00152	----	----	----	----
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L		<0.000100	----	----	----	----
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L		<0.000050	----	----	----	----
Boron, total	7440-42-8	E420/VA	0.010	mg/L		0.022	----	----	----	----
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L		<0.0000050	----	----	----	----
Calcium, total	7440-70-2	E420/VA	0.050	mg/L		7.11	----	----	----	----
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L		0.000186	----	----	----	----
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L		<0.00050	----	----	----	----
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Copper, total	7440-50-8	E420/VA	0.00050	mg/L		0.0139	----	----	----	----
Iron, total	7439-89-6	E420/VA	0.010	mg/L		<0.010	----	----	----	----
Lead, total	7439-92-1	E420/VA	0.000050	mg/L		0.000061	----	----	----	----
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L		0.0026	----	----	----	----
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L		1.29	----	----	----	----
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L		<0.0000050	----	----	----	----
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		0.000588	----	----	----	----
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L		<0.00050	----	----	----	----
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L		0.053	----	----	----	----
Potassium, total	7440-09-7	E420/VA	0.050	mg/L		1.30	----	----	----	----
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L		0.00394	----	----	----	----
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L		<0.000050	----	----	----	----
Silicon, total	7440-21-3	E420/VA	0.10	mg/L		14.8	----	----	----	----
Silver, total	7440-22-4	E420/VA	0.000010	mg/L		<0.000010	----	----	----	----
Sodium, total	7440-23-5	E420/VA	0.050	mg/L		5.31	----	----	----	----
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L		0.0744	----	----	----	----
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L		2.48	----	----	----	----
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L		<0.00020	----	----	----	----
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L		<0.000010	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	Powerhouse Springs	Gilford	Tantalus	Birken	Parkaway
					Client sampling date / time	13-Jun-2024 08:30	13-Jun-2024 07:45	13-Jun-2024 07:00	13-Jun-2024 06:40	13-Jun-2024 07:15
						VA24B3864-001	VA24B3864-002	VA24B3864-003	VA24B3864-004	VA24B3864-005
						Result	Result	Result	Result	Result
Total Metals										
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Tin, total	7440-31-5	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L		<0.00030	----	----	----	----
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L		0.000033	----	----	----	----
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L		0.0108	----	----	----	----
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L		0.0030	----	----	----	----
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L		<0.00020	----	----	----	----
Aggregate Organics										
Chemical oxygen demand [COD]	----	E559-L/VA	10	mg/L		18	----	----	----	----
Volatile Organic Compounds [THMs]										
Bromodichloromethane	75-27-4	E611B/VA	1.0	µg/L		----	<1.0	<1.0	<1.0	<1.0
Bromoform	75-25-2	E611B/VA	1.0	µg/L		----	<1.0	<1.0	<1.0	<1.0
Chloroform	67-66-3	E611B/VA	1.0	µg/L		----	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane	124-48-1	E611B/VA	1.0	µg/L		----	<1.0	<1.0	<1.0	<1.0
Trihalomethanes [THMs], total	----	E611B/VA	2.0	µg/L		----	<2.0	<2.0	<2.0	<2.0
Volatile Organic Compounds [THMs] Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611B/VA	1.0	%		----	92.4	89.6	89.4	88.2
Difluorobenzene, 1,4-	540-36-3	E611B/VA	1.0	%		----	101	101	101	102
Disinfectant By-Products										
Bromate	15541-45-4	E722A/WT	0.00030	mg/L		<0.00030	----	----	----	----
Chlorate	14866-68-3	E409.CLO3/WT	0.010	mg/L		<0.010	----	----	----	----
Perchlorate	7601-90-3	E722A/WT	0.00020	mg/L		<0.00020	----	----	----	----
Haloacetic Acids										
Bromochloroacetic acid	5589-96-8	E750/WT	1.00	µg/L		----	<1.00	<1.00	<1.00	<1.00
Dibromoacetic acid	631-64-1	E750/WT	1.00	µg/L		----	<1.00	<1.00	<1.00	<1.00
Dichloroacetic acid	79-43-6	E750/WT	1.00	µg/L		----	<1.00	<1.00	<1.00	<1.00
Monobromoacetic acid	79-08-3	E750/WT	1.00	µg/L		----	<1.00	<1.00	<1.00	<1.00
Monochloroacetic acid	79-11-8	E750/WT	1.00	µg/L		----	<1.00	<1.00	<1.00	<1.00

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Powerhouse Springs	Gilford	Tantalus	Birken	Parkaway
					Client sampling date / time	13-Jun-2024 08:30	13-Jun-2024 07:45	13-Jun-2024 07:00	13-Jun-2024 06:40	13-Jun-2024 07:15
Analyte	CAS Number	Method/Lab	LOR	Unit		VA24B3864-001	VA24B3864-002	VA24B3864-003	VA24B3864-004	VA24B3864-005
						Result	Result	Result	Result	Result
Haloacetic Acids										
Trichloroacetic acid	76-03-9	E750/WT	1.00	µg/L		----	<1.00	<1.00	<1.00	<1.00
Haloacetic acids, total [HAA5]	n/a	E750/WT	5.00	µg/L		----	<5.00	<5.00	<5.00	<5.00

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	:**VA24B3864**	Page	: 1 of 13
Client	:**District of Squamish**	Laboratory	: ALS Environmental - Vancouver
Contact	:Craig Halliday	Account Manager	: Ian Chen
Address	:39907 Government Road PO Box 310 Squamish BC Canada V8B 0A3	Address	:8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:604 815 6864	Telephone	: +1 604 253 4188
Project	:----	Date Samples Received	: 13-Jun-2024 12:30
PO	: 503472	Issue Date	: 26-Jun-2024 12:15
C-O-C number	:----		
Sampler	:BM		
Site	:----		
Quote number	:VA23-DOSQ100-002		
No. of samples received	:5		
No. of samples analysed	:5		

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 Matrix Spike Duplicate (MSD) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

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

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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) Powerhouse Springs	E559-L	13-Jun-2024	----	----	----		19-Jun-2024	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Powerhouse Springs	E298	13-Jun-2024	18-Jun-2024	28 days	5 days	✓	20-Jun-2024	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE Powerhouse Springs	E235.Br-L	13-Jun-2024	14-Jun-2024	28 days	1 days	✓	14-Jun-2024	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Powerhouse Springs	E235.Cl	13-Jun-2024	14-Jun-2024	28 days	1 days	✓	14-Jun-2024	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Powerhouse Springs	E235.F	13-Jun-2024	14-Jun-2024	28 days	1 days	✓	14-Jun-2024	28 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Powerhouse Springs	E235.NO3-L	13-Jun-2024	14-Jun-2024	3 days	1 days	✓	14-Jun-2024	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Powerhouse Springs	E235.NO2-L	13-Jun-2024	14-Jun-2024	3 days	1 days	✓	14-Jun-2024	3 days	1 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE Powerhouse Springs	E235.SO4	13-Jun-2024	14-Jun-2024	28 days	1 days	✓	14-Jun-2024	28 days	1 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) Powerhouse Springs	E318	13-Jun-2024	18-Jun-2024	28 days	5 days	✓	19-Jun-2024	28 days	6 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) Powerhouse Springs	E366	13-Jun-2024	18-Jun-2024	28 days	5 days	✓	20-Jun-2024	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) Powerhouse Springs	E372-U	13-Jun-2024	18-Jun-2024	28 days	5 days	✓	20-Jun-2024	28 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) Powerhouse Springs	E333	13-Jun-2024	17-Jun-2024	14 days	4 days	✓	17-Jun-2024	14 days	4 days	✓
Disinfectant By-Products : Bromate and Perchlorate in Water by LC-MS-MS										
Opaque HDPE (EDA) Powerhouse Springs	E722A	13-Jun-2024	24-Jun-2024	28 days	11 days	✓	25-Jun-2024	28 days	1 days	✓
Disinfectant By-Products : Chlorate (CLO3) in Waters by Ion Chromatography										
Opaque HDPE (EDA) Powerhouse Springs	E409.CLO3	13-Jun-2024	25-Jun-2024	28 days	12 days	✓	25-Jun-2024	28 days	12 days	✓
Disinfectant By-Products : Chlorite (CLO2) in Waters by Ion Chromatography										
Opaque HDPE (EDA) Powerhouse Springs	E409.CLO2	13-Jun-2024	25-Jun-2024	14 days	12 days	✓	25-Jun-2024	14 days	12 days	✓
Haloacetic Acids : Haloacetic Acids in Water by LC-MS/MS										
Glass vial (ammonium chloride) Birken	E750	13-Jun-2024	17-Jun-2024	14 days	4 days	✓	17-Jun-2024	14 days	0 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Haloacetic Acids : Haloacetic Acids in Water by LC-MS/MS										
Glass vial (ammonium chloride) Gilford	E750	13-Jun-2024	17-Jun-2024	14 days	4 days	✓	17-Jun-2024	14 days	0 days	✓
Haloacetic Acids : Haloacetic Acids in Water by LC-MS/MS										
Glass vial (ammonium chloride) Parkaway	E750	13-Jun-2024	17-Jun-2024	14 days	4 days	✓	17-Jun-2024	14 days	0 days	✓
Haloacetic Acids : Haloacetic Acids in Water by LC-MS/MS										
Glass vial (ammonium chloride) Tantalus	E750	13-Jun-2024	17-Jun-2024	14 days	4 days	✓	17-Jun-2024	14 days	0 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) Powerhouse Springs	E355-L	13-Jun-2024	18-Jun-2024	28 days	5 days	✓	18-Jun-2024	28 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Powerhouse Springs	E290	13-Jun-2024	14-Jun-2024	14 days	1 days	✓	15-Jun-2024	14 days	2 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE Powerhouse Springs	E329	13-Jun-2024	14-Jun-2024	3 days	1 days	✓	14-Jun-2024	3 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE Powerhouse Springs	E100	13-Jun-2024	14-Jun-2024	28 days	1 days	✓	15-Jun-2024	28 days	2 days	✓
Physical Tests : pH by Meter										
HDPE Powerhouse Springs	E108	13-Jun-2024	14-Jun-2024	0.25 hrs	26 hrs	× EHTR-FM	15-Jun-2024	0.25 hrs	49 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE Powerhouse Springs	E162	13-Jun-2024	----	----	----		19-Jun-2024	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE Powerhouse Springs	E121	13-Jun-2024	----	----	----		16-Jun-2024	3 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) Powerhouse Springs	E508	13-Jun-2024	19-Jun-2024	28 days	6 days	✓	19-Jun-2024	28 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Powerhouse Springs	E420	13-Jun-2024	15-Jun-2024	180 days	2 days	✓	18-Jun-2024	180 days	5 days	✓
Volatile Organic Compounds [THMs] : THMs by Headspace GC-MS										
Glass vial (sodium thiosulfate) Birken	E611B	13-Jun-2024	16-Jun-2024	14 days	3 days	✓	16-Jun-2024	14 days	3 days	✓
Volatile Organic Compounds [THMs] : THMs by Headspace GC-MS										
Glass vial (sodium thiosulfate) Gilford	E611B	13-Jun-2024	16-Jun-2024	14 days	3 days	✓	16-Jun-2024	14 days	3 days	✓
Volatile Organic Compounds [THMs] : THMs by Headspace GC-MS										
Glass vial (sodium thiosulfate) Parkaway	E611B	13-Jun-2024	16-Jun-2024	14 days	3 days	✓	16-Jun-2024	14 days	3 days	✓
Volatile Organic Compounds [THMs] : THMs by Headspace GC-MS										
Glass vial (sodium thiosulfate) Tantalus	E611B	13-Jun-2024	16-Jun-2024	14 days	3 days	✓	16-Jun-2024	14 days	3 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)							
Alkalinity Species by Titration	E290	1494150	1	11	9.0	5.0	✓
Ammonia by Fluorescence	E298	1500770	1	20	5.0	5.0	✓
Bromate and Perchlorate in Water by LC-MS-MS	E722A	1510915	1	4	25.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1494156	1	1	100.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1502294	1	11	9.0	5.0	✓
Chlorate (CLO3) in Waters by Ion Chromatography	E409.CLO3	1512442	1	2	50.0	5.0	✓
Chloride in Water by IC	E235.Cl	1494152	1	7	14.2	5.0	✓
Chlorite (CLO2) in Waters by Ion Chromatography	E409.CLO2	1512441	1	2	50.0	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	1494157	1	13	7.6	5.0	✓
Conductivity in Water	E100	1494149	1	11	9.0	5.0	✓
Fluoride in Water by IC	E235.F	1494155	1	7	14.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1494153	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1494154	1	13	7.6	5.0	✓
pH by Meter	E108	1494148	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	1494151	1	7	14.2	5.0	✓
TDS by Gravimetry	E162	1502674	1	20	5.0	5.0	✓
THMs by Headspace GC-MS	E611B	1496562	1	15	6.6	5.0	✓
Total Cyanide	E333	1497522	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1500765	1	8	12.5	5.0	✓
Total Mercury in Water by CVAAS	E508	1501655	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1494926	1	20	5.0	5.0	✓
Total Nitrogen by Colourimetry	E366	1500771	1	5	20.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1500767	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1500768	1	15	6.6	5.0	✓
Turbidity by Nephelometry	E121	1496797	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1494150	1	11	9.0	5.0	✓
Ammonia by Fluorescence	E298	1500770	1	20	5.0	5.0	✓
Bromate and Perchlorate in Water by LC-MS-MS	E722A	1510915	1	4	25.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1494156	1	1	100.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1502294	1	11	9.0	5.0	✓
Chlorate (CLO3) in Waters by Ion Chromatography	E409.CLO3	1512442	1	2	50.0	5.0	✓
Chloride in Water by IC	E235.Cl	1494152	1	7	14.2	5.0	✓
Chlorite (CLO2) in Waters by Ion Chromatography	E409.CLO2	1512441	1	2	50.0	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	1494157	1	13	7.6	5.0	✓
Conductivity in Water	E100	1494149	1	11	9.0	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Fluoride in Water by IC	E235.F	1494155	1	7	14.2	5.0	✓
Haloacetic Acids in Water by LC-MS/MS	E750	1497700	1	7	14.2	4.7	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1494153	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1494154	1	13	7.6	5.0	✓
pH by Meter	E108	1494148	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	1494151	1	7	14.2	5.0	✓
TDS by Gravimetry	E162	1502674	1	20	5.0	5.0	✓
THMs by Headspace GC-MS	E611B	1496562	1	15	6.6	5.0	✓
Total Cyanide	E333	1497522	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1500765	1	8	12.5	5.0	✓
Total Mercury in Water by CVAAS	E508	1501655	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1494926	1	20	5.0	5.0	✓
Total Nitrogen by Colourimetry	E366	1500771	1	5	20.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1500767	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1500768	1	15	6.6	5.0	✓
Turbidity by Nephelometry	E121	1496797	1	20	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1494150	1	11	9.0	5.0	✓
Ammonia by Fluorescence	E298	1500770	1	20	5.0	5.0	✓
Bromate and Perchlorate in Water by LC-MS-MS	E722A	1510915	1	4	25.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1494156	1	1	100.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1502294	1	11	9.0	5.0	✓
Chlorate (ClO3) in Waters by Ion Chromatography	E409.ClO3	1512442	1	2	50.0	5.0	✓
Chloride in Water by IC	E235.Cl	1494152	1	7	14.2	5.0	✓
Chlorite (ClO2) in Waters by Ion Chromatography	E409.ClO2	1512441	1	2	50.0	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	1494157	1	13	7.6	5.0	✓
Conductivity in Water	E100	1494149	1	11	9.0	5.0	✓
Fluoride in Water by IC	E235.F	1494155	1	7	14.2	5.0	✓
Haloacetic Acids in Water by LC-MS/MS	E750	1497700	1	7	14.2	4.7	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1494153	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1494154	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	1494151	1	7	14.2	5.0	✓
TDS by Gravimetry	E162	1502674	1	20	5.0	5.0	✓
THMs by Headspace GC-MS	E611B	1496562	1	15	6.6	5.0	✓
Total Cyanide	E333	1497522	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1500765	1	8	12.5	5.0	✓
Total Mercury in Water by CVAAS	E508	1501655	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1494926	1	20	5.0	5.0	✓
Total Nitrogen by Colourimetry	E366	1500771	1	5	20.0	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							
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1500767	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1500768	1	15	6.6	5.0	✓
Turbidity by Nephelometry	E121	1496797	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1500770	1	20	5.0	5.0	✓
Bromate and Perchlorate in Water by LC-MS-MS	E722A	1510915	1	4	25.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1494156	0	1	0.0	5.0	×
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1502294	1	11	9.0	5.0	✓
Chlorate (CLO3) in Waters by Ion Chromatography	E409.CLO3	1512442	1	2	50.0	5.0	✓
Chloride in Water by IC	E235.Cl	1494152	1	7	14.2	5.0	✓
Chlorite (CLO2) in Waters by Ion Chromatography	E409.CLO2	1512441	1	2	50.0	5.0	✓
Fluoride in Water by IC	E235.F	1494155	1	7	14.2	5.0	✓
Haloacetic Acids in Water by LC-MS/MS	E750	1497700	1	7	14.2	4.7	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1494153	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1494154	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	1494151	1	7	14.2	5.0	✓
THMs by Headspace GC-MS	E611B	1496562	1	15	6.6	5.0	✓
Total Cyanide	E333	1497522	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1500765	1	8	12.5	5.0	✓
Total Mercury in Water by CVAAS	E508	1501655	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1494926	1	20	5.0	5.0	✓
Total Nitrogen by Colourimetry	E366	1500771	1	5	20.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1500767	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1500768	1	15	6.6	5.0	✓
Matrix Spike Duplicates (MSD)							
Haloacetic Acids in Water by LC-MS/MS	E750	1497700	1	7	14.2	4.7	✓

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 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 ALS Environmental - Vancouver	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
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 ± 2°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.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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).
Colour (True) by Spectrometer (5 CU)	E329 ALS Environmental - Vancouver	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Cyanide	E333 ALS Environmental - Waterloo	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
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 inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Total Nitrogen by Colourimetry	E366 ALS Environmental - Vancouver	Water	Chinchilla Scientific Nitrate Method, 2011	Following digestion, total nitrogen is is determined colourimetrically using a discrete analyzer utilizing the vanadium chloride reduction method. This method of analysis is approved under US EPA 40 CFR Part 136 (May 2021).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Chlorite (CLO_2) in Waters by Ion Chromatography	E409.CLO2 ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity detection.
Chlorate (CLO_3) in Waters by Ion Chromatography	E409.CLO3 ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity detection.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Vancouver	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAAS	E508 ALS Environmental - Vancouver	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L ALS Environmental - Vancouver	Water	APHA 5220 D (mod)	Samples are analyzed using the closed reflux colourimetric method.
THMs by Headspace GC-MS	E611B 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.
Bromate and Perchlorate in Water by LC-MS-MS	E722A ALS Environmental - Waterloo	Water	EPA 6850	A aliquot of the water sample is filtered and an internal standard is added. The sample is then analyzed by LC/MS/MS.
Haloacetic Acids in Water by LC-MS/MS	E750 ALS Environmental - Waterloo	Water	MOE E3478	An aliquot of sample is fortified with formic acid and internal standards and analyzed via direct injection by LCMSMS
Hardness (Calculated) from Total Ca/Mg	EC100A ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

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 Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Total Organic Carbon by Combustion	EP355 ALS Environmental - Vancouver	Water		Preparation for Total Organic Carbon by Combustion
Digestion for Total Nitrogen in water	EP366 ALS Environmental - Vancouver	Water	APHA 4500-P J (mod)	Samples for total nitrogen analysis are digested using a heated persulfate digestion. Nitrogen compounds are converted to nitrate in this digestion.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
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 the GC/MS-FID system.
Preparation of Bromate and Perchlorate in Water by LC-MS-MS	EP722 ALS Environmental - Waterloo	Water	EPA 6850	An aliquot of the water sample is filtered if required and internal standard is added.
Preparation of Haloacetic acid in Water for LCMSMS	EP750 ALS Environmental - Waterloo	Water	E3478	An aliquot of samples is fortified with formic acid and internal standard to be analyzed by direct injection LCMSMS

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA24B3864**	Page	: 1 of 15
Client	: District of Squamish	Laboratory	: ALS Environmental - Vancouver
Contact	: Craig Halliday	Account Manager	: Ian Chen
Address	: 39907 Government Road PO Box 310 Squamish BC Canada V8B 0A3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 815 6864	Telephone	: +1 604 253 4188
Project	: ----	Date Samples Received	: 13-Jun-2024 12:30
PO	: 503472	Date Analysis Commenced	: 14-Jun-2024
C-O-C number	: ----	Issue Date	: 26-Jun-2024 12:14
Sampler	: BM		
Site	: ----		
Quote number	: VA23-DOSQ100-002		
No. of samples received	: 5		
No. of samples analysed	: 5		

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
- Matrix Spike Duplicate (MSD) Report; Relative Percent Difference (RPD)
- 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*
Janice Leung	Supervisor - Organics Instrumentation	Vancouver Organics, Burnaby, British Columbia
Leon Yang	Analyst	Vancouver Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Vancouver Inorganics, Burnaby, British Columbia
Nik Perkio	Senior Analyst	Waterloo Inorganics, Waterloo, Ontario
Robin Weeks	Team Leader - Metals	Vancouver Inorganics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia
Sam Silveira	Analyst	Vancouver Metals, Burnaby, British Columbia
Sanja Risticevic	Department Manager - LCMS	Waterloo LCMS, Waterloo, Ontario
Stephanie Pinheiro	Team Leader - LCMS	Waterloo LCMS, Waterloo, Ontario

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: 1494148)											
VA24B3819-001	Anonymous	pH	----	E108	0.10	pH units	8.10	8.10	0.00%	4%	----
Physical Tests (QC Lot: 1494149)											
VA24B3819-001	Anonymous	Conductivity	----	E100	2.0	µS/cm	135	136	0.740%	10%	----
Physical Tests (QC Lot: 1494150)											
VA24B3819-001	Anonymous	Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	55.8	55.8	0.00%	20%	----
Physical Tests (QC Lot: 1494157)											
VA24B3858-001	Anonymous	Colour, true	----	E329	5.0	CU	<5.0	<5.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1496797)											
KS2402128-002	Anonymous	Turbidity	----	E121	0.10	NTU	0.52	0.49	0.02	Diff <2x LOR	----
Physical Tests (QC Lot: 1502674)											
KS2402220-001	Anonymous	Solids, total dissolved [TDS]	----	E162	13	mg/L	85	78	7	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1494151)											
VA24B3864-001	Powerhouse Springs	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	8.10	8.09	0.0770%	20%	----
Anions and Nutrients (QC Lot: 1494152)											
VA24B3864-001	Powerhouse Springs	Chloride	16887-00-6	E235.Cl	0.50	mg/L	4.55	4.54	0.01	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1494153)											
VA24B3864-001	Powerhouse Springs	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0609	0.0596	2.14%	20%	----
Anions and Nutrients (QC Lot: 1494154)											
VA24B3864-001	Powerhouse Springs	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: 1494155)											
VA24B3864-001	Powerhouse Springs	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.091	0.091	0.00005	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1494156)											
VA24B3864-001	Powerhouse Springs	Bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1500765)											
VA24B3578-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.050	0.058	0.007	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1500768)											
VA24B3855-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0543	0.0550	1.23%	20%	----
Anions and Nutrients (QC Lot: 1500770)											
VA24B3504-016	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0250	mg/L	4.22	4.13	2.00%	20%	----
Anions and Nutrients (QC Lot: 1500771)											

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*
Anions and Nutrients (QC Lot: 1500771) - continued											
VA24B3855-001	Anonymous	Nitrogen, total	7727-37-9	E366	0.030	mg/L	<0.030	<0.030	0	Diff <2x LOR	----
Cyanides (QC Lot: 1497522)											
VA24B3855-001	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1500767)											
VA24B3578-001	Anonymous	Carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Total Metals (QC Lot: 1494926)											
VA24B1501-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.414	0.420	1.31%	20%	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	0.00020	0.00020	0.000005	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00104	0.00105	1.47%	20%	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.0886	0.0932	5.09%	20%	----
		Beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.010	mg/L	1.14	1.11	2.22%	20%	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000129	0.0000113	0.0000016	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	149	149	0.235%	20%	----
		Cesium, total	7440-46-2	E420	0.000010	mg/L	0.000206	0.000211	1.98%	20%	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	0.00188	0.00185	0.00004	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00288	0.00285	1.17%	20%	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.00189	0.00190	0.00001	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.010	mg/L	9.40	9.24	1.73%	20%	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.000110	0.000109	0.0000004	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0010	mg/L	0.0016	0.0016	0.000009	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	21.6	21.8	0.996%	20%	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	2.39	2.39	0.285%	20%	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000170	0.000161	0.000009	Diff <2x LOR	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	0.00418	0.00417	0.00001	Diff <2x LOR	----
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	0.062	<0.050	0.012	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.050	mg/L	26.4	25.7	2.67%	20%	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.0164	0.0164	0.137%	20%	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.000253	0.000189	0.000065	Diff <2x LOR	----
		Silicon, total	7440-21-3	E420	0.10	mg/L	6.44	6.31	1.98%	20%	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.050	mg/L	89.8	89.9	0.163%	20%	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	0.685	0.684	2.78%	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*
Total Metals (QC Lot: 1494926) - continued											
VA24B1501-001	Anonymous	Sulfur, total	7704-34-9	E420	0.50	mg/L	1.96	2.14	0.18	Diff <2x LOR	----
		Tellurium, total	13494-80-9	E420	0.00020	mg/L	0.00021	<0.00020	0.00001	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00010	mg/L	0.00015	0.00015	0.0000007	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00030	mg/L	0.0166	0.0171	3.06%	20%	----
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000010	mg/L	0.000137	0.000140	2.02%	20%	----
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00223	0.00219	0.00004	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0030	mg/L	0.0048	0.0055	0.0008	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
Total Metals (QC Lot: 1501655)											
VA24B3836-002	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Aggregate Organics (QC Lot: 1502294)											
VA24B3504-021	Anonymous	Chemical oxygen demand [COD]	----	E559-L	10	mg/L	92	80	13	Diff <2x LOR	----
Volatile Organic Compounds [THMs] (QC Lot: 1496562)											
KS2402211-001	Anonymous	Bromodichloromethane	75-27-4	E611B	1.0	µg/L	3.4	3.5	3.5%	30%	----
		Bromoform	75-25-2	E611B	1.0	µg/L	<1.0	<1.0	0.0%	30%	----
		Chloroform	67-66-3	E611B	1.0	µg/L	81.8	84.1	2.8%	30%	----
		Dibromochloromethane	124-48-1	E611B	1.0	µg/L	<1.0	<1.0	0.0%	30%	----
Disinfectant By-Products (QC Lot: 1510915)											
VA24B3864-001	Powerhouse Springs	Bromate	15541-45-4	E722A	0.30	µg/L	<0.00030 mg/L	<0.30	0	Diff <2x LOR	----
		Perchlorate	7601-90-3	E722A	0.20	µg/L	<0.00020 mg/L	<0.20	0	Diff <2x LOR	----
Disinfectant By-Products (QC Lot: 1512441)											
VA24B3864-001	Powerhouse Springs	Chlorite	14998-27-7	E409.CLO2	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
Disinfectant By-Products (QC Lot: 1512442)											
VA24B3864-001	Powerhouse Springs	Chlorate	14866-68-3	E409.CLO3	0.010	mg/L	<0.010	<0.010	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: 1494149)						
Conductivity	----	E100	1	µS/cm	1.4	----
Physical Tests (QCLot: 1494150)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 1494157)						
Colour, true	----	E329	5	CU	<5.0	----
Physical Tests (QCLot: 1496797)						
Turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 1502674)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 1494151)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 1494152)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 1494153)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1494154)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 1494155)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1494156)						
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 1500765)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 1500768)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 1500770)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1500771)						
Nitrogen, total	7727-37-9	E366	0.03	mg/L	<0.030	----
Cyanides (QCLot: 1497522)						
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	<0.0020	----
Organic / Inorganic Carbon (QCLot: 1500767)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Organic / Inorganic Carbon (QCLot: 1500767) - continued						
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 1494926)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1494926) - continued						
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 1501655)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Aggregate Organics (QCLot: 1502294)						
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	<10	----
Volatile Organic Compounds [THMs] (QCLot: 1496562)						
Bromodichloromethane	75-27-4	E611B	1	µg/L	<1.0	----
Bromoform	75-25-2	E611B	1	µg/L	<1.0	----
Chloroform	67-66-3	E611B	1	µg/L	<1.0	----
Dibromochloromethane	124-48-1	E611B	1	µg/L	<1.0	----
Disinfectant By-Products (QCLot: 1510915)						
Bromate	15541-45-4	E722A	0.3	µg/L	<0.30	----
Perchlorate	7601-90-3	E722A	0.2	µg/L	<0.20	----
Disinfectant By-Products (QCLot: 1512441)						
Chlorite	14998-27-7	E409.CLO2	0.01	mg/L	<0.010	----
Disinfectant By-Products (QCLot: 1512442)						
Chlorate	14866-68-3	E409.CLO3	0.01	mg/L	<0.010	----
Haloacetic Acids (QCLot: 1497700)						
Bromochloroacetic acid	5589-96-8	E750	0.5	µg/L	<0.50	----
Dibromoacetic acid	631-64-1	E750	1	µg/L	<1.00	----
Dichloroacetic acid	79-43-6	E750	1	µg/L	<1.00	----
Monobromoacetic acid	79-08-3	E750	0.2	µg/L	<0.20	----
Monochloroacetic acid	79-11-8	E750	0.5	µg/L	<0.50	----
Trichloroacetic acid	76-03-9	E750	1	µg/L	<1.00	----

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: 1494148)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 1494149)									
Conductivity	----	E100	1	µS/cm	147 µS/cm	96.5	90.0	110	----
Physical Tests (QCLot: 1494150)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	107	85.0	115	----
Physical Tests (QCLot: 1494157)									
Colour, true	----	E329	5	CU	100 CU	108	85.0	115	----
Physical Tests (QCLot: 1496797)									
Turbidity	----	E121	0.1	NTU	200 NTU	99.5	85.0	115	----
Physical Tests (QCLot: 1502674)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	102	85.0	115	----
Anions and Nutrients (QCLot: 1494151)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 1494152)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 1494153)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 1494154)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 1494155)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1494156)									
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	105	85.0	115	----
Anions and Nutrients (QCLot: 1500765)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	108	75.0	125	----
Anions and Nutrients (QCLot: 1500768)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	84.2	80.0	120	----
Anions and Nutrients (QCLot: 1500770)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	98.1	85.0	115	----
Anions and Nutrients (QCLot: 1500771)									
Nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	98.3	75.0	125	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Target Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Cyanides (QCLot: 1497522)									
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	0.25 mg/L	94.0	80.0	120	----
Organic / Inorganic Carbon (QCLot: 1500767)									
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	107	80.0	120	----
Total Metals (QCLot: 1494926)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	105	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	111	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	109	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	110	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	97.8	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	105	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	101	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	105	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	105	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	97.5	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	108	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	106	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	104	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	103	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	108	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	103	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	101	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	94.4	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	110	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	97.2	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	97.9	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
Total Metals (QCLot: 1494926) - continued									
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	108	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	99.7	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	96.2	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	105	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	94.3	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	102	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	104	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	107	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	104	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	100	80.0	120	----
Total Metals (QCLot: 1501655)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0 mg/L	101	80.0	120	----
Aggregate Organics (QCLot: 1502294)									
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	100 mg/L	105	85.0	115	----
Volatile Organic Compounds [THMs] (QCLot: 1496562)									
Bromodichloromethane	75-27-4	E611B	1	µg/L	100 µg/L	98.6	70.0	130	----
Bromoform	75-25-2	E611B	1	µg/L	100 µg/L	101	70.0	130	----
Chloroform	67-66-3	E611B	1	µg/L	100 µg/L	102	70.0	130	----
Dibromochloromethane	124-48-1	E611B	1	µg/L	100 µg/L	101	70.0	130	----
Disinfectant By-Products (QCLot: 1510915)									
Bromate	15541-45-4	E722A	0.3	µg/L	4 µg/L	104	70.0	130	----
Perchlorate	7601-90-3	E722A	0.2	µg/L	4 µg/L	103	70.0	130	----
Disinfectant By-Products (QCLot: 1512441)									
Chlorite	14998-27-7	E409.CLO2	0.01	mg/L	1 mg/L	102	85.0	115	----
Disinfectant By-Products (QCLot: 1512442)									
Chlorate	14866-68-3	E409.CLO3	0.01	mg/L	1 mg/L	101	85.0	115	----
Haloacetic Acids (QCLot: 1497700)									
Bromochloroacetic acid	5589-96-8	E750	0.5	µg/L	2.5 µg/L	107	70.0	130	----
Dibromoacetic acid	631-64-1	E750	1	µg/L	5 µg/L	104	70.0	130	----
Dichloroacetic acid	79-43-6	E750	1	µg/L	5 µg/L	117	70.0	130	----
Monobromoacetic acid	79-08-3	E750	0.2	µg/L	1 µg/L	124	70.0	130	----
Monochloroacetic acid	79-11-8	E750	0.5	µg/L	2.5 µg/L	97.7	70.0	130	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Haloacetic Acids (QCLot: 1497700) - continued									
Trichloroacetic acid	76-03-9	E750	1	µg/L	5 µg/L	91.3	70.0	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.

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: 1494151)										
VA24B3659-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	103 mg/L	100 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 1494152)										
VA24B3659-001	Anonymous	Chloride	16887-00-6	E235.Cl	103 mg/L	100 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 1494153)										
VA24B3659-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.59 mg/L	2.5 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 1494154)										
VA24B3659-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.520 mg/L	0.5 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 1494155)										
VA24B3659-001	Anonymous	Fluoride	16984-48-8	E235.F	0.995 mg/L	1 mg/L	99.5	75.0	125	----
Anions and Nutrients (QCLot: 1500765)										
VA24B3855-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.48 mg/L	2.5 mg/L	99.4	70.0	130	----
Anions and Nutrients (QCLot: 1500768)										
VA24B3855-002	Anonymous	Phosphorus, total	7723-14-0	E372-U	ND mg/L	----	ND	70.0	130	----
Anions and Nutrients (QCLot: 1500770)										
VA24B3504-017	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0910 mg/L	0.1 mg/L	91.0	75.0	125	----
Anions and Nutrients (QCLot: 1500771)										
VA24B3855-002	Anonymous	Nitrogen, total	7727-37-9	E366	0.405 mg/L	0.4 mg/L	101	70.0	130	----
Cyanides (QCLot: 1497522)										
VA24B3855-001	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.197 mg/L	0.25 mg/L	78.9	75.0	125	----
Organic / Inorganic Carbon (QCLot: 1500767)										
VA24B3855-001	Anonymous	Carbon, total organic [TOC]	----	E355-L	5.27 mg/L	5 mg/L	105	70.0	130	----
Total Metals (QCLot: 1494926)										
VA24B1501-002	Anonymous	Aluminum, total	7429-90-5	E420	0.186 mg/L	0.2 mg/L	93.2	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0215 mg/L	0.02 mg/L	107	70.0	130	----
		Barium, total	7440-39-3	E420	ND mg/L	----	ND	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0416 mg/L	0.04 mg/L	104	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.00938 mg/L	0.01 mg/L	93.8	70.0	130	----
		Boron, total	7440-42-8	E420	ND mg/L	----	ND	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00379 mg/L	0.004 mg/L	94.7	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	----	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.0102 mg/L	0.01 mg/L	102	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0406 mg/L	0.04 mg/L	102	70.0	130	----

Sub-Matrix: Water

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 1494926) - continued										
VA24B1501-002	Anonymous	Cobalt, total	7440-48-4	E420	0.0193 mg/L	0.02 mg/L	96.6	70.0	130	----
		Copper, total	7440-50-8	E420	0.0189 mg/L	0.02 mg/L	94.6	70.0	130	----
		Iron, total	7439-89-6	E420	ND mg/L	----	ND	70.0	130	----
		Lead, total	7439-92-1	E420	0.0188 mg/L	0.02 mg/L	93.9	70.0	130	----
		Lithium, total	7439-93-2	E420	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	----	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	----	ND	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0205 mg/L	0.02 mg/L	103	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0379 mg/L	0.04 mg/L	94.8	70.0	130	----
		Phosphorus, total	7723-14-0	E420	10.6 mg/L	10 mg/L	106	70.0	130	----
		Potassium, total	7440-09-7	E420	ND mg/L	----	ND	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0392 mg/L	0.04 mg/L	97.9	70.0	130	----
		Silicon, total	7440-21-3	E420	10.6 mg/L	10 mg/L	106	70.0	130	----
		Silver, total	7440-22-4	E420	0.00377 mg/L	0.004 mg/L	94.4	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	----	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	----	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	21.5 mg/L	20 mg/L	107	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.0384 mg/L	0.04 mg/L	96.1	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00363 mg/L	0.004 mg/L	90.8	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0144 mg/L	0.02 mg/L	72.1	70.0	130	----
		Tin, total	7440-31-5	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		Uranium, total	7440-61-1	E420	0.00389 mg/L	0.004 mg/L	97.3	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		Zinc, total	7440-66-6	E420	0.391 mg/L	0.4 mg/L	97.8	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.0434 mg/L	0.04 mg/L	108	70.0	130	----
Total Metals (QCLot: 1501655)										
VA24B3836-003	Anonymous	Mercury, total	7439-97-6	E508	0.000104 mg/L	0 mg/L	104	70.0	130	----
Aggregate Organics (QCLot: 1502294)										
VA24B3504-022	Anonymous	Chemical oxygen demand [COD]	----	E559-L	101 mg/L	100 mg/L	101	75.0	125	----
Volatile Organic Compounds [THMs] (QCLot: 1496562)										
VA24B3798-001	Anonymous	Bromodichloromethane	75-27-4	E611B	108 µg/L	100 µg/L	108	60.0	140	----
		Bromoform	75-25-2	E611B	111 µg/L	100 µg/L	111	60.0	140	----
		Chloroform	67-66-3	E611B	104 µg/L	100 µg/L	104	60.0	140	----
		Dibromochloromethane	124-48-1	E611B	111 µg/L	100 µg/L	111	60.0	140	----
Disinfectant By-Products (QCLot: 1510915)										
VA24B3864-001	Powerhouse Springs	Bromate	15541-45-4	E722A	4.35 µg/L	4 µg/L	109	70.0	130	----
		Perchlorate	7601-90-3	E722A	4.04 µg/L	4 µg/L	101	70.0	130	----
Disinfectant By-Products (QCLot: 1512441)										

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
Disinfectant By-Products (QCLot: 1512441) - continued										
VA24B3864-001	Powerhouse Springs	Chlorite	14998-27-7	E409.CLO2	1.01 mg/L	1 mg/L	101	75.0	125	----
Disinfectant By-Products (QCLot: 1512442)										
VA24B3864-001	Powerhouse Springs	Chlorate	14866-68-3	E409.CLO3	1.02 mg/L	1 mg/L	102	75.0	125	----
Haloacetic Acids (QCLot: 1497700)										
VA24B3864-002	Gilford	Bromochloroacetic acid	5589-96-8	E750	2.35 µg/L	2.5 µg/L	94.1	70.0	130	----
		Dibromoacetic acid	631-64-1	E750	4.41 µg/L	5 µg/L	88.3	70.0	130	----
		Dichloroacetic acid	79-43-6	E750	4.58 µg/L	5 µg/L	91.5	70.0	130	----
		Monobromoacetic acid	79-08-3	E750	0.93 µg/L	1 µg/L	92.7	70.0	130	----
		Monochloroacetic acid	79-11-8	E750	2.10 µg/L	2.5 µg/L	84.0	70.0	130	----
		Trichloroacetic acid	76-03-9	E750	3.86 µg/L	5 µg/L	77.2	70.0	130	----

Matrix Spike Duplicate (MSD) Report

A Matrix Spike Duplicate (MSD) is a duplicate of a Matrix Spike (MS), which has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spike Duplicates provide information regarding method precision. ALS DQOs for Matrix Spike Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD).

Sub-Matrix: **Water**

					Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	MSD Result	RPD(%) or Difference	MSD Limits	Qualifier
Haloacetic Acids (QC Lot: 1497700)											
QC-149770-004		Bromochloroacetic acid	5589-96-8	E750	1.00	µg/L	2.55	2.88	12.8%	200%	----
		Dibromoacetic acid	631-64-1	E750	1.00	µg/L	4.52	5.36	17.3%	200%	----
		Dichloroacetic acid	79-43-6	E750	1.00	µg/L	4.67	5.58	18.4%	200%	----
		Monobromoacetic acid	79-08-3	E750	1.00	µg/L	<1.00	1.28	28.1%	200%	----
		Monochloroacetic acid	79-11-8	E750	1.00	µg/L	2.10	2.08	0.717%	200%	----
		Trichloroacetic acid	76-03-9	E750	1.00	µg/L	3.90	4.69	18.6%	200%	----

ALS www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20 -

Page of

Report To	Contact and company name below will appear on the final report
Company:	District of Squamish
Contact:	Craig Halliday
Phone:	604.815.9942
	Company address below will appear on the final report
Street:	39909 Government Rd
City/Province:	Squamish
Postal Code:	V8B 0A3
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	District of Squamish
Contact:	Craig Halliday

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☑ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: challiday@squamish.ca

Email 2

Email 3

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: challiday@squamish.ca

Email 2

Turnaround Time (TAT) Requested

☑ 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. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For tests that can not be performed according to the TAT requested, you will be contacted.

Project Information

ALS Account # / Quote #:

Job #:

PO / AFE: 503472

LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: | PO#

Major/Minor Code: | Routing Code:

Requisitioner:

Location:

ALS Lab Work Order # (lab use only):

ALS Contact: Kaitlyn | Sampler: BM

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Bromate/Chlorite/Chlorate	Cyanides	General	Metals/Merc	NUT/TOC/COD/TKN/TN/TP/NH3/PHEN	HAA	THM	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	Powerhouse Springs	13-Jun-24	0830	Grab	5	✓	✓	✓	✓	✓					
	~~Council~~ Gilford	13-Jun-24	0745	Grab	4						✓	✓			
	Tantalus	13-Jun-24	0700	Grab	4						✓	✓			
	Birken	13-Jun-24	0640	Grab	4						✓	✓			
	Parkaway	13-Jun-24	0715	Grab	4						✓	✓			

Environmental Division
Vancouver
Work Order Reference
VA24B3864
Telephone: +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☑ YES ☐ NO

Are samples for human consumption/ use? ☑ YES ☐ NO

Notes / Specify ... down below

SAMPLE RECEIPT DETAILS (lab use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

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 | FINAL COOLER TEMPERATURES °C 4

SHIPMENT RELEASE (client use) | Time:

...ON (lab use only) | Time:

FINAL SHIPMENT RECEPTION (lab use only) | Received by: | Date: 6/13/24 | Time: 1230 P

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.

ALS Canada Ltd.

CERTIFICATE OF ANALYSIS

Work Order	: **VA24C9330**		
Client	: **District of Squamish**	Laboratory	: ALS Environmental - Vancouver
Contact	: Craig Halliday	Account Manager	: Gulraj Dhanaua
Address	: 39907 Government Road PO Box 310 Squamish British Columbia Canada V8B 0A3	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 815 6864	Telephone	: +1 604 253 4188
Project	: Semi Annual Samples	Date Samples Received	: 29-Oct-2024 12:25
PO	: 504004	Date Analysis Commenced	: 31-Oct-2024
C-O-C number	: ----	Issue Date	: 12-Nov-2024 14:01
Sampler	: ----		
Site	: ----		
Quote number	: VA23-DOSQ100-002		
No. of samples received	: 5		
No. of samples analysed	: 5		

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.

Signatories	*Position*	*Laboratory Department*
Daniel Nguyen	Laboratory Analyst	Metals, Edmonton, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Inorganics, Burnaby, British Columbia
Nik Perkio	Senior Analyst	Inorganics, Waterloo, Ontario
Rebecca Sit	Supervisor - Organics Extractions	Organics, Burnaby, British Columbia
Stephanie Pinheiro	Team Leader - LCMS	LCMS, Waterloo, Ontario

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*
mg/L	milligrams per litre
pH units	pH units
µS/cm	microsiemens per centimetre
NTU	nephelometric turbidity units
CU	colour units (1 cu = 1 mg/l pt)
µg/L	micrograms per litre

<: 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.

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	Powerhouse Springs	Parkway	Crumpit Woods	Birken	3rd Ave.
				Client sampling date / time	29-Oct-2024 09:20	29-Oct-2024 07:21	29-Oct-2024 08:55	29-Oct-2024 07:05	29-Oct-2024 07:57
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	VA24C9330-001	VA24C9330-002	VA24C9330-003	VA24C9330-004	VA24C9330-005
					Result	Result	Result	Result	Result
Physical Tests									
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L	22.3	----	----	----	----
Colour, true	----	E329/VA	5.0	CU	<5.0	----	----	----	----
Conductivity	----	E100/VA	2.0	µS/cm	76.3	----	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L	23.4	----	----	----	----
pH	----	E108/VA	0.10	pH units	7.44	----	----	----	----
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L	83	----	----	----	----
Turbidity	----	E121/VA	0.10	NTU	0.17	----	----	----	----
Anions and Nutrients									
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L	<0.0050	----	----	----	----
Bromide	24959-67-9	E235.Br-L/VA	0.050	mg/L	<0.050	----	----	----	----
Chloride	16887-00-6	E235.Cl/VA	0.50	mg/L	4.81	----	----	----	----
Fluoride	16984-48-8	E235.F/VA	0.020	mg/L	0.095	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318/VA	0.050	mg/L	<0.050	----	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	0.0050	mg/L	0.0582	----	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	0.0010	mg/L	<0.0010	----	----	----	----
Nitrogen, total	7727-37-9	E366/VA	0.030	mg/L	0.059	----	----	----	----
Phosphorus, total	7723-14-0	E372-U/VA	0.0020	mg/L	0.0383	----	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	0.30	mg/L	8.03	----	----	----	----
Cyanides									
Cyanide, strong acid dissociable (Total)	----	E333/WT	0.0050	mg/L	<0.0050	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Powerhouse Springs	Parkway	Crumpit Woods	Birken	3rd Ave.
					Client sampling date / time	29-Oct-2024 09:20	29-Oct-2024 07:21	29-Oct-2024 08:55	29-Oct-2024 07:05	29-Oct-2024 07:57
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit		VA24C9330-001	VA24C9330-002	VA24C9330-003	VA24C9330-004	VA24C9330-005
						Result	Result	Result	Result	Result
Organic / Inorganic Carbon										
Carbon, total organic [TOC]	----	E355-L/VA	0.50	mg/L		<0.50	----	----	----	----
Inorganics										
Chlorite	14998-27-7	E409.CLO2/WT	0.010	mg/L		<0.010	----	----	----	----
Total Metals										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L		0.0074	----	----	----	----
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L		0.00060	----	----	----	----
Barium, total	7440-39-3	E420/VA	0.00010	mg/L		0.00148	----	----	----	----
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L		<0.000100	----	----	----	----
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L		<0.000050	----	----	----	----
Boron, total	7440-42-8	E420/VA	0.010	mg/L		0.021	----	----	----	----
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L		<0.0000050	----	----	----	----
Calcium, total	7440-70-2	E420/VA	0.050	mg/L		7.25	----	----	----	----
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L		0.000202	----	----	----	----
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L		<0.00050	----	----	----	----
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Copper, total	7440-50-8	E420/VA	0.00050	mg/L		0.00533	----	----	----	----
Iron, total	7439-89-6	E420/VA	0.010	mg/L		0.031	----	----	----	----
Lead, total	7439-92-1	E420/VA	0.000050	mg/L		0.000101	----	----	----	----
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L		0.0025	----	----	----	----
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L		1.28	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Powerhouse Springs	Parkway	Crumpit Woods	Birken	3rd Ave.
					Client sampling date / time	29-Oct-2024 09:20	29-Oct-2024 07:21	29-Oct-2024 08:55	29-Oct-2024 07:05	29-Oct-2024 07:57
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit		VA24C9330-001	VA24C9330-002	VA24C9330-003	VA24C9330-004	VA24C9330-005
						Result	Result	Result	Result	Result
Total Metals										
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		0.00055	----	----	----	----
Mercury, total	7439-97-6	E508/EO	0.0000050	mg/L		<0.0000050	----	----	----	----
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		0.000604	----	----	----	----
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L		<0.00050	----	----	----	----
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L		0.066	----	----	----	----
Potassium, total	7440-09-7	E420/VA	0.050	mg/L		1.33	----	----	----	----
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L		0.00386	----	----	----	----
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L		<0.000050	----	----	----	----
Silicon, total	7440-21-3	E420/VA	0.10	mg/L		15.6	----	----	----	----
Silver, total	7440-22-4	E420/VA	0.000010	mg/L		<0.000010	----	----	----	----
Sodium, total	7440-23-5	E420/VA	0.050	mg/L		5.10	----	----	----	----
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L		0.0759	----	----	----	----
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L		2.16	----	----	----	----
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L		<0.00020	----	----	----	----
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L		<0.000010	----	----	----	----
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Tin, total	7440-31-5	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L		<0.00030	----	----	----	----
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L		0.000032	----	----	----	----
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L		0.0106	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Powerhouse Springs	Parkway	Crumpit Woods	Birken	3rd Ave.
					Client sampling date / time	29-Oct-2024 09:20	29-Oct-2024 07:21	29-Oct-2024 08:55	29-Oct-2024 07:05	29-Oct-2024 07:57
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit		VA24C9330-001	VA24C9330-002	VA24C9330-003	VA24C9330-004	VA24C9330-005
						Result	Result	Result	Result	Result
Total Metals										
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L		<0.0030	----	----	----	----
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L		<0.00020	----	----	----	----
Aggregate Organics										
Chemical oxygen demand [COD]	----	E559-L/VA	10	mg/L		<10	----	----	----	----
Volatile Organic Compounds [THMs]										
Bromodichloromethane	75-27-4	E611B/VA	1.0	µg/L		----	<1.0	<1.0	<1.0	<1.0
Bromoform	75-25-2	E611B/VA	1.0	µg/L		----	<1.0	<1.0	<1.0	<1.0
Chloroform	67-66-3	E611B/VA	1.0	µg/L		----	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane	124-48-1	E611B/VA	1.0	µg/L		----	<1.0	<1.0	<1.0	<1.0
Trihalomethanes [THMs], total	----	E611B/VA	2.0	µg/L		----	<2.0	<2.0	<2.0	<2.0
Volatile Organic Compounds [THMs] Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611B/VA	1.0	%		----	91.1	92.8	93.8	90.7
Difluorobenzene, 1,4-	540-36-3	E611B/VA	1.0	%		----	100	99.8	100	100
Disinfectant By-Products										
Bromate	15541-45-4	E722A/WT	0.00030	mg/L		<0.00030	----	----	----	----
Chlorate	14866-68-3	E409.CLO3/WT	0.010	mg/L		<0.010	----	----	----	----
Perchlorate	7601-90-3	E722A/WT	0.00020	mg/L		<0.00020	----	----	----	----
Haloacetic Acids										
Bromochloroacetic acid	5589-96-8	E750/WT	1.00	µg/L		----	<1.00	<1.00	<1.00	<1.00
Dibromoacetic acid	631-64-1	E750/WT	1.00	µg/L		----	<1.00	<1.00	<1.00	<1.00
Dichloroacetic acid	79-43-6	E750/WT	1.00	µg/L		----	<1.00	<1.00	<1.00	<1.00

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Powerhouse Springs	Parkway	Crumpit Woods	Birken	3rd Ave.
					Client sampling date / time	29-Oct-2024 09:20	29-Oct-2024 07:21	29-Oct-2024 08:55	29-Oct-2024 07:05	29-Oct-2024 07:57
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit		VA24C9330-001	VA24C9330-002	VA24C9330-003	VA24C9330-004	VA24C9330-005
						Result	Result	Result	Result	Result
Haloacetic Acids										
Monobromoacetic acid	79-08-3	E750/WT	1.00	µg/L	----	<1.00	<1.00	<1.00	<1.00	
Monochloroacetic acid	79-11-8	E750/WT	1.00	µg/L	----	<1.00	<1.00	<1.00	<1.00	
Trichloroacetic acid	76-03-9	E750/WT	1.00	µg/L	----	<1.00	<1.00	<1.00	<1.00	
Haloacetic acids, total [HAA5]	n/a	E750/WT	5.00	µg/L	----	<5.00	<5.00	<5.00	<5.00	

Please refer to the General Comments section for an explanation of any result qualifiers detected.
Please refer to the Accreditation section for an explanation of analyte accreditations.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	:**VA24C9330**	Page	: 1 of 13
Client	:**District of Squamish**	Laboratory	: ALS Environmental - Vancouver
Contact	:Craig Halliday	Account Manager	: Gulraj Dhanaua
Address	:39907 Government Road PO Box 310 Squamish BC Canada V8B 0A3	Address	:8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:604 815 6864	Telephone	: +1 604 253 4188
Project	:Semi Annual Samples	Date Samples Received	: 29-Oct-2024 12:25
PO	: 504004	Issue Date	: 12-Nov-2024 14:02
C-O-C number	:----		
Sampler	:----		
Site	:----		
Quote number	:VA23-DOSQ100-002		
No. of samples received	:5		
No. of samples analysed	:5		

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 Matrix Spike Duplicate (MSD) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

- 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid)										
Powerhouse Springs	E559-L	29-Oct-2024	----	----	----		06-Nov-2024	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Powerhouse Springs	E298	29-Oct-2024	06-Nov-2024	28 days	8 days	✓	07-Nov-2024	28 days	9 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
Powerhouse Springs	E235.Br-L	29-Oct-2024	01-Nov-2024	28 days	3 days	✓	01-Nov-2024	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
Powerhouse Springs	E235.Cl	29-Oct-2024	01-Nov-2024	28 days	3 days	✓	01-Nov-2024	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Powerhouse Springs	E235.F	29-Oct-2024	01-Nov-2024	28 days	3 days	✓	01-Nov-2024	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Powerhouse Springs	E235.NO3-L	29-Oct-2024	01-Nov-2024	3 days	3 days	✓	01-Nov-2024	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
Powerhouse Springs	E235.NO2-L	29-Oct-2024	01-Nov-2024	3 days	3 days	✓	01-Nov-2024	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE Powerhouse Springs	E235.SO4	29-Oct-2024	01-Nov-2024	28 days	3 days	✓	01-Nov-2024	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) Powerhouse Springs	E318	29-Oct-2024	06-Nov-2024	28 days	8 days	✓	07-Nov-2024	28 days	9 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) Powerhouse Springs	E366	29-Oct-2024	06-Nov-2024	28 days	8 days	✓	07-Nov-2024	28 days	9 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) Powerhouse Springs	E372-U	29-Oct-2024	06-Nov-2024	28 days	8 days	✓	07-Nov-2024	28 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) Powerhouse Springs	E333	29-Oct-2024	04-Nov-2024	14 days	6 days	✓	04-Nov-2024	14 days	6 days	✓
Disinfectant By-Products : Bromate and Perchlorate in Water by LC-MS-MS										
Opaque HDPE (EDA) Powerhouse Springs	E722A	29-Oct-2024	04-Nov-2024	28 days	6 days	✓	04-Nov-2024	28 days	0 days	✓
Disinfectant By-Products : Chlorate (CLO3) in Waters by Ion Chromatography										
Opaque HDPE (EDA) Powerhouse Springs	E409.CLO3	29-Oct-2024	06-Nov-2024	28 days	8 days	✓	06-Nov-2024	28 days	8 days	✓
Disinfectant By-Products : Chlorite (CLO2) in Waters by Ion Chromatography										
Opaque HDPE (EDA) Powerhouse Springs	E409.CLO2	29-Oct-2024	06-Nov-2024	14 days	8 days	✓	06-Nov-2024	14 days	8 days	✓
Haloacetic Acids : Haloacetic Acids in Water by LC-MS/MS										
Glass vial (ammonium chloride) 3rd Ave.	E750	29-Oct-2024	04-Nov-2024	14 days	6 days	✓	04-Nov-2024	14 days	0 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Haloacetic Acids : Haloacetic Acids in Water by LC-MS/MS										
Glass vial (ammonium chloride) Birken	E750	29-Oct-2024	04-Nov-2024	14 days	6 days	✓	04-Nov-2024	14 days	0 days	✓
Haloacetic Acids : Haloacetic Acids in Water by LC-MS/MS										
Glass vial (ammonium chloride) Crumpit Woods	E750	29-Oct-2024	04-Nov-2024	14 days	6 days	✓	04-Nov-2024	14 days	0 days	✓
Haloacetic Acids : Haloacetic Acids in Water by LC-MS/MS										
Glass vial (ammonium chloride) Parkway	E750	29-Oct-2024	04-Nov-2024	14 days	6 days	✓	04-Nov-2024	14 days	0 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) Powerhouse Springs	E355-L	29-Oct-2024	06-Nov-2024	28 days	8 days	✓	06-Nov-2024	28 days	8 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Powerhouse Springs	E290	29-Oct-2024	01-Nov-2024	14 days	3 days	✓	01-Nov-2024	14 days	3 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE Powerhouse Springs	E329	29-Oct-2024	01-Nov-2024	3 days	3 days	✓	01-Nov-2024	3 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE Powerhouse Springs	E100	29-Oct-2024	01-Nov-2024	28 days	3 days	✓	01-Nov-2024	28 days	3 days	✓
Physical Tests : pH by Meter										
HDPE Powerhouse Springs	E108	29-Oct-2024	01-Nov-2024	0.25 hrs	68 hrs	× EHTR-FM	01-Nov-2024	0.25 hrs	69 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE Powerhouse Springs	E162	29-Oct-2024	----	----	----		05-Nov-2024	7 days	7 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE Powerhouse Springs	E121	29-Oct-2024	----	----	----		31-Oct-2024	3 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) Powerhouse Springs	E508	29-Oct-2024	04-Nov-2024	28 days	6 days	✓	04-Nov-2024	28 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Powerhouse Springs	E420	29-Oct-2024	02-Nov-2024	180 days	4 days	✓	04-Nov-2024	180 days	6 days	✓
Volatile Organic Compounds [THMs] : THMs by Headspace GC-MS										
Glass vial (sodium thiosulfate) 3rd Ave.	E611B	29-Oct-2024	01-Nov-2024	14 days	3 days	✓	02-Nov-2024	14 days	4 days	✓
Volatile Organic Compounds [THMs] : THMs by Headspace GC-MS										
Glass vial (sodium thiosulfate) Birken	E611B	29-Oct-2024	01-Nov-2024	14 days	3 days	✓	02-Nov-2024	14 days	4 days	✓
Volatile Organic Compounds [THMs] : THMs by Headspace GC-MS										
Glass vial (sodium thiosulfate) Crumpit Woods	E611B	29-Oct-2024	01-Nov-2024	14 days	3 days	✓	02-Nov-2024	14 days	4 days	✓
Volatile Organic Compounds [THMs] : THMs by Headspace GC-MS										
Glass vial (sodium thiosulfate) Parkway	E611B	29-Oct-2024	01-Nov-2024	14 days	3 days	✓	02-Nov-2024	14 days	4 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)							
Alkalinity Species by Titration	E290	1744354	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	1753012	1	18	5.5	5.0	✓
Bromate and Perchlorate in Water by LC-MS-MS	E722A	1748852	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1744361	1	9	11.1	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1753362	1	10	10.0	5.0	✓
Chlorate (CLO3) in Waters by Ion Chromatography	E409.CLO3	1753705	1	8	12.5	5.0	✓
Chloride in Water by IC	E235.Cl	1744357	1	13	7.6	5.0	✓
Chlorite (CLO2) in Waters by Ion Chromatography	E409.CLO2	1753706	1	8	12.5	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	1744362	1	14	7.1	5.0	✓
Conductivity in Water	E100	1744353	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	1744360	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1744358	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1744359	1	16	6.2	5.0	✓
pH by Meter	E108	1744352	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	1744356	1	11	9.0	5.0	✓
TDS by Gravimetry	E162	1749749	1	20	5.0	5.0	✓
THMs by Headspace GC-MS	E611B	1744540	1	20	5.0	5.0	✓
Total Cyanide	E333	1745420	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1753015	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	1747074	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1742534	1	19	5.2	5.0	✓
Total Nitrogen by Colourimetry	E366	1753014	1	16	6.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1753013	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1753016	1	3	33.3	5.0	✓
Turbidity by Nephelometry	E121	1743599	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1744354	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	1753012	1	18	5.5	5.0	✓
Bromate and Perchlorate in Water by LC-MS-MS	E722A	1748852	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1744361	1	9	11.1	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1753362	1	10	10.0	5.0	✓
Chlorate (CLO3) in Waters by Ion Chromatography	E409.CLO3	1753705	1	8	12.5	5.0	✓
Chloride in Water by IC	E235.Cl	1744357	1	13	7.6	5.0	✓
Chlorite (CLO2) in Waters by Ion Chromatography	E409.CLO2	1753706	1	8	12.5	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	1744362	1	14	7.1	5.0	✓
Conductivity in Water	E100	1744353	1	13	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*
Laboratory Control Samples (LCS) - Continued							
Fluoride in Water by IC	E235.F	1744360	1	11	9.0	5.0	✓
Haloacetic Acids in Water by LC-MS/MS	E750	1748554	1	20	5.0	4.7	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1744358	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1744359	1	16	6.2	5.0	✓
pH by Meter	E108	1744352	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	1744356	1	11	9.0	5.0	✓
TDS by Gravimetry	E162	1749749	1	20	5.0	5.0	✓
THMs by Headspace GC-MS	E611B	1744540	1	20	5.0	5.0	✓
Total Cyanide	E333	1745420	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1753015	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	1747074	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1742534	1	19	5.2	5.0	✓
Total Nitrogen by Colourimetry	E366	1753014	1	16	6.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1753013	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1753016	1	3	33.3	5.0	✓
Turbidity by Nephelometry	E121	1743599	1	20	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1744354	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	1753012	1	18	5.5	5.0	✓
Bromate and Perchlorate in Water by LC-MS-MS	E722A	1748852	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1744361	1	9	11.1	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1753362	1	10	10.0	5.0	✓
Chlorate (ClO3) in Waters by Ion Chromatography	E409.ClO3	1753705	1	8	12.5	5.0	✓
Chloride in Water by IC	E235.Cl	1744357	1	13	7.6	5.0	✓
Chlorite (ClO2) in Waters by Ion Chromatography	E409.ClO2	1753706	1	8	12.5	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	1744362	1	14	7.1	5.0	✓
Conductivity in Water	E100	1744353	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	1744360	1	11	9.0	5.0	✓
Haloacetic Acids in Water by LC-MS/MS	E750	1748554	1	20	5.0	4.7	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1744358	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1744359	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	1744356	1	11	9.0	5.0	✓
TDS by Gravimetry	E162	1749749	1	20	5.0	5.0	✓
THMs by Headspace GC-MS	E611B	1744540	1	20	5.0	5.0	✓
Total Cyanide	E333	1745420	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1753015	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	1747074	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1742534	1	19	5.2	5.0	✓
Total Nitrogen by Colourimetry	E366	1753014	1	16	6.2	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1753013	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1753016	1	3	33.3	5.0	✓
Turbidity by Nephelometry	E121	1743599	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1753012	1	18	5.5	5.0	✓
Bromate and Perchlorate in Water by LC-MS-MS	E722A	1748852	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1744361	1	9	11.1	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1753362	1	10	10.0	5.0	✓
Chlorate (CLO3) in Waters by Ion Chromatography	E409.CLO3	1753705	1	8	12.5	5.0	✓
Chloride in Water by IC	E235.Cl	1744357	1	13	7.6	5.0	✓
Chlorite (CLO2) in Waters by Ion Chromatography	E409.CLO2	1753706	1	8	12.5	5.0	✓
Fluoride in Water by IC	E235.F	1744360	1	11	9.0	5.0	✓
Haloacetic Acids in Water by LC-MS/MS	E750	1748554	1	20	5.0	4.7	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1744358	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1744359	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	1744356	1	11	9.0	5.0	✓
THMs by Headspace GC-MS	E611B	1744540	1	20	5.0	5.0	✓
Total Cyanide	E333	1745420	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1753015	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	1747074	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1742534	1	19	5.2	5.0	✓
Total Nitrogen by Colourimetry	E366	1753014	1	16	6.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1753013	1	15	6.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1753016	1	3	33.3	5.0	✓
Matrix Spike Duplicates (MSD)							
Haloacetic Acids in Water by LC-MS/MS	E750	1748554	1	20	5.0	4.7	✓

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 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 ALS Environmental - Vancouver	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
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 ± 2°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.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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).
Colour (True) by Spectrometer (5 CU)	E329 ALS Environmental - Vancouver	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Cyanide	E333 ALS Environmental - Waterloo	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
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 inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Total Nitrogen by Colourimetry	E366 ALS Environmental - Vancouver	Water	Chinchilla Scientific Nitrate Method, 2011	Following digestion, total nitrogen is is determined colourimetrically using a discrete analyzer utilizing the vanadium chloride reduction method. This method of analysis is approved under US EPA 40 CFR Part 136 (May 2021).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Chlorite (CLO_2) in Waters by Ion Chromatography	E409.CLO2 ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity detection.
Chlorate (CLO_3) in Waters by Ion Chromatography	E409.CLO3 ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity detection.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Vancouver	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAAS	E508 ALS Environmental - Edmonton	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L ALS Environmental - Vancouver	Water	APHA 5220 D (mod)	Samples are analyzed using the closed reflux colourimetric method.
THMs by Headspace GC-MS	E611B 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.
Bromate and Perchlorate in Water by LC-MS-MS	E722A ALS Environmental - Waterloo	Water	EPA 6850	A aliquot of the water sample is filtered and an internal standard is added. The sample is then analyzed by LC/MS/MS.
Haloacetic Acids in Water by LC-MS/MS	E750 ALS Environmental - Waterloo	Water	MOE E3478	An aliquot of sample is fortified with formic acid and internal standards and analyzed via direct injection by LCMSMS
Hardness (Calculated) from Total Ca/Mg	EC100A ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

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 Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Total Organic Carbon by Combustion	EP355 ALS Environmental - Vancouver	Water		Preparation for Total Organic Carbon by Combustion
Digestion for Total Nitrogen in water	EP366 ALS Environmental - Vancouver	Water	APHA 4500-P J (mod)	Samples for total nitrogen analysis are digested using a heated persulfate digestion. Nitrogen compounds are converted to nitrate in this digestion.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
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.
Preparation of Bromate and Perchlorate in Water by LC-MS-MS	EP722 ALS Environmental - Waterloo	Water	EPA 6850	An aliquot of the water sample is filtered if required and internal standard is added.
Preparation of Haloacetic acid in Water for LCMSMS	EP750 ALS Environmental - Waterloo	Water	E3478	An aliquot of samples is fortified with formic acid and internal standard to be analyzed by direct injection LCMSMS

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA24C9330**	Page	: 1 of 15
Client	: District of Squamish	Laboratory	: ALS Environmental - Vancouver
Contact	: Craig Halliday	Account Manager	: Gulraj Dhanaua
Address	: 39907 Government Road PO Box 310 Squamish BC Canada V8B 0A3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 815 6864	Telephone	: +1 604 253 4188
Project	: Semi Annual Samples	Date Samples Received	: 29-Oct-2024 12:25
PO	: 504004	Date Analysis Commenced	: 31-Oct-2024
C-O-C number	: ----	Issue Date	: 12-Nov-2024 14:01
Sampler	: ----		
Site	: ----		
Quote number	: VA23-DOSQ100-002		
No. of samples received	: 5		
No. of samples analysed	: 5		

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
- Matrix Spike Duplicate (MSD) Report; Relative Percent Difference (RPD)
- 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*
Daniel Nguyen	Laboratory Analyst	Edmonton Metals, Edmonton, Alberta
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Vancouver Inorganics, Burnaby, British Columbia
Nik Perkio	Senior Analyst	Waterloo Inorganics, Waterloo, Ontario
Rebecca Sit	Supervisor - Organics Extractions	Vancouver Organics, Burnaby, British Columbia
Stephanie Pinheiro	Team Leader - LCMS	Waterloo LCMS, Waterloo, Ontario

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: 1743599)											
VA24C9084-001	Anonymous	Turbidity	----	E121	0.10	NTU	0.81	0.77	0.04	Diff <2x LOR	----
Physical Tests (QC Lot: 1744352)											
KS2404576-002	Anonymous	pH	----	E108	0.10	pH units	8.25	8.25	0.00%	4%	----
Physical Tests (QC Lot: 1744353)											
KS2404576-002	Anonymous	Conductivity	----	E100	2.0	µS/cm	225	227	0.885%	10%	----
Physical Tests (QC Lot: 1744354)											
KS2404576-002	Anonymous	Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	110	109	1.46%	20%	----
Physical Tests (QC Lot: 1744362)											
KS2404559-001	Anonymous	Colour, true	----	E329	5.0	CU	9.1	9.1	0.02	Diff <2x LOR	----
Physical Tests (QC Lot: 1749749)											
VA24C9308-001	Anonymous	Solids, total dissolved [TDS]	----	E162	20	mg/L	968	950	1.82%	20%	----
Anions and Nutrients (QC Lot: 1744356)											
KS2404576-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	18.8	18.7	0.342%	20%	----
Anions and Nutrients (QC Lot: 1744357)											
KS2404576-001	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	0.65	0.64	0.008	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1744358)											
KS2404576-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1744359)											
KS2404576-001	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: 1744360)											
KS2404576-001	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.081	0.082	0.0006	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1744361)											
KS2404576-001	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: 1753012)											
FJ2403356-017	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0071	0.0069	0.0002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1753014)											
FJ2403356-017	Anonymous	Nitrogen, total	7727-37-9	E366	0.030	mg/L	0.168	0.168	0.0001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1753015)											
VA24C9262-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.134	0.153	0.019	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1753016)											

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*
Anions and Nutrients (QC Lot: 1753016) - continued											
FJ2403356-017	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0064	0.0063	0.0001	Diff <2x LOR	---
Cyanides (QC Lot: 1745420)											
EO2409886-001	Anonymous	Cyanide, strong acid dissociable (Total)	---	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	---
Organic / Inorganic Carbon (QC Lot: 1753013)											
FJ2403356-017	Anonymous	Carbon, total organic [TOC]	---	E355-L	0.50	mg/L	5.27	5.49	4.16%	20%	---
Total Metals (QC Lot: 1742534)											
VA24C9170-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0231	0.0219	0.0012	Diff <2x LOR	---
		Antimony, total	7440-36-0	E420	0.00010	mg/L	0.00041	0.00040	0.000006	Diff <2x LOR	---
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00073	0.00083	0.00010	Diff <2x LOR	---
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.0161	0.0162	1.23%	20%	---
		Beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	---
		Bismuth, total	7440-69-9	E420	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	---
		Boron, total	7440-42-8	E420	0.010	mg/L	0.061	0.061	0.00003	Diff <2x LOR	---
		Cadmium, total	7440-43-9	E420	0.0000100	mg/L	<0.0000100	<0.0000100	0	Diff <2x LOR	---
		Calcium, total	7440-70-2	E420	0.050	mg/L	45.6	46.2	1.33%	20%	---
		Cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	---
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	---
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	---
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.00078	0.00078	0.000004	Diff <2x LOR	---
		Iron, total	7439-89-6	E420	0.010	mg/L	0.036	0.036	0.0002	Diff <2x LOR	---
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.000068	0.000069	0.0000002	Diff <2x LOR	---
		Lithium, total	7439-93-2	E420	0.0010	mg/L	0.0028	0.0028	0.00002	Diff <2x LOR	---
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	16.2	16.1	0.716%	20%	---
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.00877	0.00897	2.31%	20%	---
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00214	0.00217	1.20%	20%	---
		Nickel, total	7440-02-0	E420	0.00050	mg/L	0.00204	0.00200	0.00004	Diff <2x LOR	---
		Phosphorus, total	7723-14-0	E420	0.300	mg/L	<0.300	<0.300	0	Diff <2x LOR	---
		Potassium, total	7440-09-7	E420	0.050	mg/L	6.32	6.29	0.462%	20%	---
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00202	0.00221	8.94%	20%	---
		Selenium, total	7782-49-2	E420	0.000100	mg/L	0.000114	0.000146	0.000032	Diff <2x LOR	---
		Silicon, total	7440-21-3	E420	0.10	mg/L	0.68	0.69	0.008	Diff <2x LOR	---
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	---
		Sodium, total	7440-23-5	E420	0.050	mg/L	13.2	13.1	0.838%	20%	---
		Strontium, total	7440-24-6	E420	0.00020	mg/L	0.200	0.198	1.08%	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*
Total Metals (QC Lot: 1742534) - continued											
VA24C9170-001	Anonymous	Sulfur, total	7704-34-9	E420	0.50	mg/L	22.2	22.3	0.536%	20%	----
		Tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000010	mg/L	0.000391	0.000389	0.447%	20%	----
		Vanadium, total	7440-62-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Total Metals (QC Lot: 1747074)											
VA24C9258-011	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Aggregate Organics (QC Lot: 1753362)											
VA24C9124-001	Anonymous	Chemical oxygen demand [COD]	----	E559-L	40	mg/L	1800	1840	1.95%	20%	----
Volatile Organic Compounds [THMs] (QC Lot: 1744540)											
VA24C9092-004	Anonymous	Bromodichloromethane	75-27-4	E611B	1.0	µg/L	<1.0	<1.0	0.0%	30%	----
		Bromoform	75-25-2	E611B	1.0	µg/L	<1.0	<1.0	0.0%	30%	----
		Chloroform	67-66-3	E611B	1.0	µg/L	29.4	29.4	0.0%	30%	----
		Dibromochloromethane	124-48-1	E611B	1.0	µg/L	<1.0	<1.0	0.0%	30%	----
Disinfectant By-Products (QC Lot: 1748852)											
WT2432798-001	Anonymous	Bromate	15541-45-4	E722A	0.45	µg/L	<0.00045 mg/L	<0.45	0	Diff <2x LOR	----
		Perchlorate	7601-90-3	E722A	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
Disinfectant By-Products (QC Lot: 1753705)											
EO2409966-001	Anonymous	Chlorate	14866-68-3	E409.CLO3	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
Disinfectant By-Products (QC Lot: 1753706)											
EO2409966-001	Anonymous	Chlorite	14998-27-7	E409.CLO2	0.010	mg/L	<0.010	<0.010	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: 1743599)						
Turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 1744353)						
Conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 1744354)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 1744362)						
Colour, true	----	E329	5	CU	<5.0	----
Physical Tests (QCLot: 1749749)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 1744356)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 1744357)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 1744358)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1744359)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 1744360)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1744361)						
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 1753012)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1753014)						
Nitrogen, total	7727-37-9	E366	0.03	mg/L	<0.030	----
Anions and Nutrients (QCLot: 1753015)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 1753016)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 1745420)						
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	<0.0020	----
Organic / Inorganic Carbon (QCLot: 1753013)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Organic / Inorganic Carbon (QCLot: 1753013) - continued						
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 1742534)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1742534) - continued						
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 1747074)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Aggregate Organics (QCLot: 1753362)						
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	<10	----
Volatile Organic Compounds [THMs] (QCLot: 1744540)						
Bromodichloromethane	75-27-4	E611B	1	µg/L	<1.0	----
Bromoform	75-25-2	E611B	1	µg/L	<1.0	----
Chloroform	67-66-3	E611B	1	µg/L	<1.0	----
Dibromochloromethane	124-48-1	E611B	1	µg/L	<1.0	----
Disinfectant By-Products (QCLot: 1748852)						
Bromate	15541-45-4	E722A	0.3	µg/L	<0.30	----
Perchlorate	7601-90-3	E722A	0.2	µg/L	<0.20	----
Disinfectant By-Products (QCLot: 1753705)						
Chlorate	14866-68-3	E409.CLO3	0.01	mg/L	<0.010	----
Disinfectant By-Products (QCLot: 1753706)						
Chlorite	14998-27-7	E409.CLO2	0.01	mg/L	<0.010	----
Haloacetic Acids (QCLot: 1748554)						
Bromochloroacetic acid	5589-96-8	E750	0.5	µg/L	<0.50	----
Dibromoacetic acid	631-64-1	E750	1	µg/L	<1.00	----
Dichloroacetic acid	79-43-6	E750	1	µg/L	<1.00	----
Monobromoacetic acid	79-08-3	E750	0.2	µg/L	<0.20	----
Monochloroacetic acid	79-11-8	E750	0.5	µg/L	<0.50	----
Trichloroacetic acid	76-03-9	E750	1	µg/L	<1.00	----

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: 1743599)									
Turbidity	----	E121	0.1	NTU	200 NTU	97.5	85.0	115	----
Physical Tests (QCLot: 1744352)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 1744353)									
Conductivity	----	E100	1	µS/cm	147 µS/cm	99.8	90.0	110	----
Physical Tests (QCLot: 1744354)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	104	85.0	115	----
Physical Tests (QCLot: 1744362)									
Colour, true	----	E329	5	CU	100 CU	103	85.0	115	----
Physical Tests (QCLot: 1749749)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	99.4	85.0	115	----
Anions and Nutrients (QCLot: 1744356)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1744357)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	99.9	90.0	110	----
Anions and Nutrients (QCLot: 1744358)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 1744359)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1744360)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1744361)									
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	108	85.0	115	----
Anions and Nutrients (QCLot: 1753012)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	94.8	85.0	115	----
Anions and Nutrients (QCLot: 1753014)									
Nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1753015)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 1753016)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	93.8	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike: Target Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Cyanides (QCLot: 1745420)									
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	0.25 mg/L	85.9	80.0	120	----
Organic / Inorganic Carbon (QCLot: 1753013)									
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	99.0	80.0	120	----
Total Metals (QCLot: 1742534)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	103	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	110	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	103	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	106	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	101	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	109	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	103	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	100	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	100	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	106	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	102	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	104	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	108	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	101	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	103	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	103	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	114	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	96.3	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	107	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	109	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	100	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
Total Metals (QCLot: 1742534) - continued									
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	103	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	102	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	104	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	107	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	108	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	102	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	107	80.0	120	----
Total Metals (QCLot: 1747074)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0 mg/L	108	80.0	120	----
Aggregate Organics (QCLot: 1753362)									
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	100 mg/L	109	85.0	115	----
Volatile Organic Compounds [THMs] (QCLot: 1744540)									
Bromodichloromethane	75-27-4	E611B	1	µg/L	100 µg/L	90.1	70.0	130	----
Bromoform	75-25-2	E611B	1	µg/L	100 µg/L	92.8	70.0	130	----
Chloroform	67-66-3	E611B	1	µg/L	100 µg/L	94.6	70.0	130	----
Dibromochloromethane	124-48-1	E611B	1	µg/L	100 µg/L	90.4	70.0	130	----
Disinfectant By-Products (QCLot: 1748852)									
Bromate	15541-45-4	E722A	0.3	µg/L	4 µg/L	96.6	70.0	130	----
Perchlorate	7601-90-3	E722A	0.2	µg/L	4 µg/L	96.4	70.0	130	----
Disinfectant By-Products (QCLot: 1753705)									
Chlorate	14866-68-3	E409.CLO3	0.01	mg/L	1 mg/L	97.9	85.0	115	----
Disinfectant By-Products (QCLot: 1753706)									
Chlorite	14998-27-7	E409.CLO2	0.01	mg/L	1 mg/L	98.9	85.0	115	----
Haloacetic Acids (QCLot: 1748554)									
Bromochloroacetic acid	5589-96-8	E750	0.5	µg/L	2.5 µg/L	103	70.0	130	----
Dibromoacetic acid	631-64-1	E750	1	µg/L	5 µg/L	118	70.0	130	----
Dichloroacetic acid	79-43-6	E750	1	µg/L	5 µg/L	113	70.0	130	----
Monobromoacetic acid	79-08-3	E750	0.2	µg/L	1 µg/L	120	70.0	130	----
Monochloroacetic acid	79-11-8	E750	0.5	µg/L	2.5 µg/L	82.6	70.0	130	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Target Concentration	LCS	Low	High	Qualifier
Haloacetic Acids (QCLot: 1748554) - continued									
Trichloroacetic acid	76-03-9	E750	1	µg/L	5 µg/L	109	70.0	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.

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: 1744356)										
KS2404576-002	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	100 mg/L	100 mg/L	100	75.0	125	---
Anions and Nutrients (QCLot: 1744357)										
KS2404576-002	Anonymous	Chloride	16887-00-6	E235.Cl	100 mg/L	100 mg/L	100	75.0	125	---
Anions and Nutrients (QCLot: 1744358)										
KS2404576-002	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.58 mg/L	2.5 mg/L	103	75.0	125	---
Anions and Nutrients (QCLot: 1744359)										
KS2404576-002	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.518 mg/L	0.5 mg/L	104	75.0	125	---
Anions and Nutrients (QCLot: 1744360)										
KS2404576-002	Anonymous	Fluoride	16984-48-8	E235.F	1.02 mg/L	1 mg/L	102	75.0	125	---
Anions and Nutrients (QCLot: 1744361)										
KS2404576-002	Anonymous	Bromide	24959-67-9	E235.Br-L	0.546 mg/L	0.5 mg/L	109	75.0	125	---
Anions and Nutrients (QCLot: 1753012)										
VA24C9262-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0918 mg/L	0.1 mg/L	91.8	75.0	125	---
Anions and Nutrients (QCLot: 1753014)										
VA24C9262-001	Anonymous	Nitrogen, total	7727-37-9	E366	0.389 mg/L	0.4 mg/L	97.4	70.0	130	---
Anions and Nutrients (QCLot: 1753015)										
VA24C9330-001	Powerhouse Springs	Kjeldahl nitrogen, total [TKN]	---	E318	2.68 mg/L	2.5 mg/L	107	70.0	130	---
Anions and Nutrients (QCLot: 1753016)										
VA24C9262-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0474 mg/L	0.05 mg/L	94.7	70.0	130	---
Cyanides (QCLot: 1745420)										
EO2409886-001	Anonymous	Cyanide, strong acid dissociable (Total)	---	E333	0.201 mg/L	0.25 mg/L	80.3	75.0	125	---
Organic / Inorganic Carbon (QCLot: 1753013)										
VA24C9262-001	Anonymous	Carbon, total organic [TOC]	---	E355-L	5.35 mg/L	5 mg/L	107	70.0	130	---
Total Metals (QCLot: 1742534)										
VA24C9170-002	Anonymous	Aluminum, total	7429-90-5	E420	ND mg/L	---	ND	70.0	130	---
		Antimony, total	7440-36-0	E420	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	---
		Arsenic, total	7440-38-2	E420	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	---
		Barium, total	7440-39-3	E420	0.0181 mg/L	0.02 mg/L	90.7	70.0	130	---
		Beryllium, total	7440-41-7	E420	0.0381 mg/L	0.04 mg/L	95.3	70.0	130	---
		Bismuth, total	7440-69-9	E420	0.00972 mg/L	0.01 mg/L	97.2	70.0	130	---
		Boron, total	7440-42-8	E420	0.092 mg/L	0.1 mg/L	91.6	70.0	130	---
		Cadmium, total	7440-43-9	E420	0.00386 mg/L	0.004 mg/L	96.5	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
Total Metals (QCLot: 1742534) - continued										
VA24C9170-002	Anonymous	Calcium, total	7440-70-2	E420	ND mg/L	----	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.0100 mg/L	0.01 mg/L	100	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0381 mg/L	0.04 mg/L	95.2	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		Copper, total	7440-50-8	E420	0.0184 mg/L	0.02 mg/L	91.9	70.0	130	----
		Iron, total	7439-89-6	E420	1.88 mg/L	2 mg/L	93.8	70.0	130	----
		Lead, total	7439-92-1	E420	0.0189 mg/L	0.02 mg/L	94.5	70.0	130	----
		Lithium, total	7439-93-2	E420	0.0908 mg/L	0.1 mg/L	90.8	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	----	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	----	ND	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0381 mg/L	0.04 mg/L	95.2	70.0	130	----
		Phosphorus, total	7723-14-0	E420	8.70 mg/L	10 mg/L	87.0	70.0	130	----
		Potassium, total	7440-09-7	E420	3.80 mg/L	4 mg/L	95.1	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0398 mg/L	0.04 mg/L	99.6	70.0	130	----
		Silicon, total	7440-21-3	E420	9.79 mg/L	10 mg/L	97.9	70.0	130	----
		Silver, total	7440-22-4	E420	0.00454 mg/L	0.004 mg/L	114	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	----	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	----	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	19.5 mg/L	20 mg/L	97.3	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.0396 mg/L	0.04 mg/L	99.0	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00360 mg/L	0.004 mg/L	89.9	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		Tin, total	7440-31-5	E420	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0377 mg/L	0.04 mg/L	94.4	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		Uranium, total	7440-61-1	E420	0.00387 mg/L	0.004 mg/L	96.7	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.0964 mg/L	0.1 mg/L	96.4	70.0	130	----
		Zinc, total	7440-66-6	E420	0.386 mg/L	0.4 mg/L	96.6	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.0418 mg/L	0.04 mg/L	104	70.0	130	----
Total Metals (QCLot: 1747074)										
VA24C9258-012	Anonymous	Mercury, total	7439-97-6	E508	0.000108 mg/L	0 mg/L	108	70.0	130	----
Aggregate Organics (QCLot: 1753362)										
VA24C9193-001	Anonymous	Chemical oxygen demand [COD]	----	E559-L	104 mg/L	100 mg/L	104	75.0	125	----
Volatile Organic Compounds [THMs] (QCLot: 1744540)										
VA24C9092-008	Anonymous	Bromodichloromethane	75-27-4	E611B	91.7 µg/L	100 µg/L	91.7	60.0	140	----
		Bromoform	75-25-2	E611B	94.7 µg/L	100 µg/L	94.7	60.0	140	----
		Chloroform	67-66-3	E611B	88.7 µg/L	100 µg/L	88.7	60.0	140	----
		Dibromochloromethane	124-48-1	E611B	91.5 µg/L	100 µg/L	91.5	60.0	140	----
Disinfectant By-Products (QCLot: 1748852)										
WT2432798-001	Anonymous	Bromate	15541-45-4	E722A	4.55 µg/L	4 µg/L	114	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
Disinfectant By-Products (QCLot: 1748852) - continued										
WT2432798-001	Anonymous	Perchlorate	7601-90-3	E722A	3.77 µg/L	4 µg/L	94.3	70.0	130	----
Disinfectant By-Products (QCLot: 1753705)										
EO2409966-001	Anonymous	Chlorate	14866-68-3	E409.CLO3	1.03 mg/L	1 mg/L	103	75.0	125	----
Disinfectant By-Products (QCLot: 1753706)										
EO2409966-001	Anonymous	Chlorite	14998-27-7	E409.CLO2	1.03 mg/L	1 mg/L	103	75.0	125	----
Haloacetic Acids (QCLot: 1748554)										
SK2406385-001	Anonymous	Bromochloroacetic acid	5589-96-8	E750	2.48 µg/L	2.5 µg/L	99.2	70.0	130	----
		Dibromoacetic acid	631-64-1	E750	5.55 µg/L	5 µg/L	111	70.0	130	----
		Dichloroacetic acid	79-43-6	E750	ND µg/L	----	ND	70.0	130	----
		Monobromoacetic acid	79-08-3	E750	1.08 µg/L	1 µg/L	108	70.0	130	----
		Monochloroacetic acid	79-11-8	E750	2.44 µg/L	2.5 µg/L	97.7	70.0	130	----
		Trichloroacetic acid	76-03-9	E750	ND µg/L	----	ND	70.0	130	----

Matrix Spike Duplicate (MSD) Report

A Matrix Spike Duplicate (MSD) is a duplicate of a Matrix Spike (MS), which has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spike Duplicates provide information regarding method precision. ALS DQOs for Matrix Spike Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD).

Sub-Matrix: **Water**

					Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	MSD Result	RPD(%) or Difference	MSD Limits	Qualifier
Haloacetic Acids (QC Lot: 1748554)											
QC-174855-004	Anonymous	Bromochloroacetic acid	5589-96-8	E750	1.00	µg/L	4.57	4.04	23.9%	200%	----
		Dibromoacetic acid	631-64-1	E750	1.00	µg/L	5.92	4.19	36.9%	200%	----
		Dichloroacetic acid	79-43-6	E750	1.00	µg/L	14.7	12.3	----%	Diff <2x LOR	----
		Monobromoacetic acid	79-08-3	E750	1.00	µg/L	1.24	<1.00	41.5%	200%	----
		Monochloroacetic acid	79-11-8	E750	1.00	µg/L	2.99	2.37	29.1%	200%	----
		Trichloroacetic acid	76-03-9	E750	1.00	µg/L	11.4	10.9	----%	Diff <2x LOR	----

ALS www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20 -

Page 1 of

Environmental Division
Vancouver
Work Order Reference
VA24C9330
Telephone : +1 604 253 4188

Report To	Contact and company name below will appear on the final report	Reports / Recipients
Company:	District of Squamish	Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Contact:	Craig Hall day	Merge QC/QCI Reports with COA ☑ YES ☐ NO ☐ N/A
Phone:	604.815.9942	☐ Compare Results to Criteria on Report - provide details below if box checked
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Street:	39909 Government Rd	Email 1 or Fax challiday@squamish.ca
City/Province:	Squamish	Email 2 bmckinney@squamish.ca
Postal Code:	V8B 0A3	Email 3
Invoice To	Same as Report To ☑ YES ☐ NO	Invoice Recipients
	Copy of Invoice with Report ☑ YES ☐ NO	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Company:	District of Squamish	Email 1 or Fax challiday@squamish.ca
Contact:	Craig Halliday	Email 2

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#
Job #:		Major/Minor Code:	Routing Code:
PO / AFE:	504004	Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):	9330	ALS Contact: Kaitlyn	Sampler: MB

Turnaround Time (TAT) Requested

- ☑ Routine [R] if received by 3pm M-F - no surcharges apply
- ☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge min
- ☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge min
- ☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge min
- ☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge min
- ☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests

Date and Time Required for all E&P TATs:

For tests that can not be performed according to

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Bromate/Chlorite/Chlorate	General Solids	Cyanides	Metals & Mercury	Nut/TOC/COD/TKN/TN/TP/NH3/Phen	HAA	THM	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	Powerhouse Springs	29/10/24	09:20	GRAB	6	✓	✓	✓	✓	✓					
	Parkway	29/10/24	07:21	GRAB	4						✓	✓			
	Crumpit Woods	29/10/24	08:55	GRAB	4						✓	✓			
	Birken	29/10/24	07:05	GRAB	4						✓	✓			
	3rd Ave	29/10/24	07:57	GRAB	4						✓	✓			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☑ YES ☐ NO

Are samples for human consumption/ use? ☑ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

SAMPLE RECEIPT DETAILS (lab use only)

Cooling Method: ☐ NONE ☐ ICE ☑ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

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 | FINAL COOLER TEMPERATURES °C: 10°C

SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
	Time:	Received by:	Date:	Time:	Received by: [illegible]	Date: Oct 29th	Time: 12:25

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.

Appendix G - Annual Surface Water Analysis

Sample Range Report

Vancouver Coastal Health

Facility Name: Stawamus River Intake
Date Range: Jan 1 2024 to Dec 31 2024

Operator

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Sampling Site	Date Collected	Total Coliform	E. Coli	Fecal Coliform
Stawamus Intake - emerg backup, Stawamus Intake				
	1/3/2024 10:45:00 AM	53.0	14.8	
	2/5/2024 11:28:00 AM	**18.7**	**LT1**	
	3/4/2024 10:01:00 AM	**21.6**	**LT1**	
	4/2/2024 10:36:00 AM	**29.5**	**LT1**	
	5/6/2024 9:14:00 AM	**62.4**	**LT1**	
	6/3/2024 9:45:00 AM	**108.6**	**5.2**	
	7/2/2024 9:15:00 AM	**118.7**	**3.1**	
	8/12/2024 11:41:00 AM	**488.4**	**6.3**	
	9/9/2024 11:45:00 AM	**517.2**	**5.1**	
	10/1/2024 11:05:00 AM	**260.3**	**4.1**	
	11/4/2024 11:48:00 AM	**1203.3**	**60.5**	
	12/2/2024 11:54:00 AM	**29.5**	**1.0**	
	Total Positive:	**12**	**8**	

Result Values: **E - estimated** **L - less than** **G - greater than**

Samples that contain total coliform:	12	100.00% of total
Samples that contain e. coli:	8	66.67% of total
Samples that contain fecal coliform:	0	0.00% of total
Number of consecutive samples that contain total coliform:	11	
Number of samples that contain total coliform in last 30 days:	0/0	
Total number of samples:	12	

Comments:

_____
Environmental Health Officer
Jan 22 2025

FOR FURTHER INFORMATION PLEASE CALL: Len Clarkson

Sample Range Report

Vancouver Coastal Health

Facility Name: Mashiter Creek Intake
Date Range: Jan 1 2024 to Dec 31 2024

Operator

,

Sampling Site	Date Collected	Total Coliform	E. Coli	Fecal Coliform
Mashiter Intake - emerg backup, Mashiter Intake				
	1/3/2024 9:35:00 AM	LT1	LT1	
	2/5/2024 10:40:00 AM	32.7	4.1	
	3/4/2024 7:32:00 AM	LT1	LT1	
	4/2/2024 8:50:00 AM	31.3	LT1	
	5/6/2024 6:53:00 AM	**69.7**	**2.0**	
	6/3/2024 7:00:00 AM	**290.9**	**19.9**	
	7/2/2024 7:00:00 AM	**42.0**	**2.0**	
	8/12/2024 8:31:00 AM	**488.4**	**7.4**	
	9/9/2024 8:55:00 AM	**325.5**	**5.2**	
	10/1/2024 8:10:00 AM	**191.8**	**2.0**	
	11/4/2024 9:15:00 AM	**1553.1**	**12.0**	
	12/2/2024 9:35:00 AM	**48.7**	**4.1**	
	Total Positive:	**10**	**9**	

Result Values: **E - estimated** **L - less than** **G - greater than**

Samples that contain total coliform:	10	83.33% of total
Samples that contain e. coli:	9	75.00% of total
Samples that contain fecal coliform:	0	0.00% of total
Number of consecutive samples that contain total coliform:	8	
Number of samples that contain total coliform in last 30 days:	0/0	
Total number of samples:	12	

Comments:

_____
Environmental Health Officer
Jan 22 2025

FOR FURTHER INFORMATION PLEASE CALL: Dan Glover (604) 892-2293