Clearbrook Waterworks District
2024 Water Quality Report

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Cover image: Pipe Replacement on Conrad Avenue; image courtesy: Ryan Federau.

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Foreword

Clearbrook Waterworks District (CWD) proudly presents the 2024 Water Quality Report to our stakeholders in order to provide a clear and complete accounting of water quality, including a full spectrum analysis of the makeup of our water. Please read on to learn more, including updates about our water system, plans to upgrade infrastructure, and clear documentation outlining the ongoing commitment of the CWD Board of Trustees and staff to maintain and deliver our high-quality, award-winning H2O.

This report, published annually, is prepared for our stakeholders and required by the provincial health legislation (Drinking Water Protection Act). The report has been prepared in collaboration with Dr. Ineke Kalwij, of Kalwij Water Dynamics Inc. (KWD). The report includes contributions from James Wiens (Certified Water Professional, CWP), CWD Field Supervisor and Ryan Federau (CWP), the District's Water Quality Technician.

CWD remains in compliance with all provincial and federal regulations relating to the supply and delivery of potable water, at all times. To that end, we maintain a close and collaborative relationship with Fraser Health Authority, and we value their feedback. We remain committed to the protection of public health through the uninterrupted supply of safe and clean drinking water to our ratepayers.

Our highly trained water system operators are certified through the Environmental Operators Certification Program, where constant education and training are necessary to maintain a valid certification. Our operators are skilled, diligent, and dedicated to maintaining and improving the system. CWD employs three Level II Water Distribution System Operators, and a Level I Operator and our newest employee is working towards the Operator-in-Training certification.

Maintaining our high standard of water quality requires a comprehensive program, utilizing proactive maintenance schedules, consistent asset management, adoption of emerging technologies, and best engineering practices. Our operators work closely with our engineering consultants to ensure all aspects of the system are designed, installed, and maintained in order to maximize the lifespan of our assets. We employ a multitude of security measures and checks to ensure the system remains safe from intrusion or contamination and our expectation is that water quality remains consistent from source to tap. We at CWD also recognize the importance of due diligence and care when it comes to managing and maintaining our production wells and our most important natural asset; the Abbotsford-Sumas Aquifer.

Despite our enhanced security measures and sampling protocols, the system was met with a challenge in 2024; our first ever Escherichia coli (E. Coli) sample, a single count in a reservoir. Through proactive intervention by our operators, we were able to keep the system isolated from the contamination and subsequent sampling confirmed that the contaminant was confined to the reservoir. For further details, please read the Water Quality Technician's summary, contained in this report (Section 5.2).

With the future of the system in mind, we continue to make capital upgrades to the system, which included in 2024 the upgrading in the Conrad Avenue and Carla Court corridor, which included the replacement of 196 m of water main with larger diameter, more resilient pipe. This project was completed by our own field crew. Pipe replacement is also scheduled for 2025.

At CWD, our stated mission is to provide superior water in sufficient quantity to the residents and businesses of the District and to ensure long-term sustainability of product and service. To that end, we believe people are CWD's most valuable asset and water is its greatest resource. We remain committed to looking after the former and safeguarding the latter. Please accept my warmest thank you, on behalf of the District's Board of Trustees and staff, for your support and interest in the operations of the District. Please read on to learn more about the water quality of your award-winning system.

Respectfully submitted,

Jason Hildebrandt, CWP
Corporate Administrator

IMAGE | OUR RESERVOIRS WITH COMBINED STORAGE OF 9,050 M^3.

Units and Abbreviations

Units

Billion Litres	BL
Cubic metres	m^3
Hour(s)	hr(s)
Inch	in
Kilometres	km
Litres per second	L/s
Litres per capital per day	L/c/d
Metres	m
Millimetres	mm
Million Litres	ML
Million cubic metres	Mm^3
Milligrams per litre	mg/L
Minute	min
Percent	%
US gallons per minute	US gpm

Abbreviations

Advanced Metering Infrastructure	AMI
Aesthetic Objective	AO
Bacteriological Activity Reaction Test	BART
BC Water and Waste Association	BCWWA
Clearbrook Waterworks District	CWD
Environmental Operators Certificate Program	EOCP
Fraser Health Authority	FHA
Heterotrophic Aerobic Bacteria	HAB
Iron Related Bacteria	IRB
Maximum Acceptable Concentration	MAC
Ministry of Water, Land and Resource Stewardship	WLRS
Most Probable Number	MPN
Nephelometric Turbidity Units	NTU
Slime Forming Bacteria	SLYM
Sulphate Reducing Bacteria	SRB
Supervisory Control and Data Acquisition	SCADA
Variable Frequency Drive	VFD

1. Introduction

The **2024 Annual Water Quality Report** has been prepared for our rate payers and Fraser Health Authority (FHA) and summarizes pertinent water system and water quality information of Clearbrook Waterworks District (CWD). Since 1954, CWD provides potable water and fire flow protection to the area formerly known as "Clearbrook", located within the City of Abbotsford. The water system is supplied by groundwater, with four production wells extracting water from the Abbotsford-Sumas Aquifer. CWD's office and works yard is located at 2889 Grandview Crescent (the reservoir site).

As per regulatory requirements, under the **Drinking Water Protection Act**[1] and **Drinking Water Protection Regulation**[2], water purveyors are required to monitor the quality of water supply source(s), the water in the distribution system, and the water supplied to the end users. CWD is working in close collaboration with the FHA drinking water officers to always ensure safe drinking water. A message from the Manager of Fraser Health Drinking Water Program, dated January 25, 2025, regarding metals in drinking water ("*Flush Message*") is included as **Appendix A**. **Appendix B** includes information about preventing water-borne infections for people with weakened immune systems.

CWD's website (www.clearbrookwaterworks.com) provides information for the rate payers regarding: (i) the water system & history; (ii) water rates and (e-)billing; (iii) bylaws; (iv) selected documents (water quality reports, water system map, leak relief request forms), and (v) the schedule of Board meetings and Annual General Meeting. Rate payers may also submit water meter readings through an online portal on the website.

IMAGE | CWD'S OFFICE & WORKS YARD (RESERVOIR SITE) AT 2889 GRANDVIEW CRESCENT.

[1] https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/01009_01.
[2] https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/200_2003.

2. Water System Overview

2.1 The Water System

CWD's water system provides potable water to residential dwellings and commercial buildings (1,418 connections as of the end of 2024), serving an estimated population of about 10,534 people[3]. The water system also provides water for fire flow requirements, and CWD is responsible for installing and maintaining the fire hydrants. The water system is fully metered. CWD is in the process of installing Advanced Metering Infrastructure (AMI) through the entire water system, and in 2024 CWD's field crew replaced 328 meters with the advanced meters. In 2025, the remaining AMI will be completed (about 400 meters).

A combined length of an approximated 33 km of water mains distributes the water through the district. Water is distributed directly from the source (production wells) and from the reservoirs. The watermain pipe sizes vary between 150-mm (6-in) and 400-mm (16-in). The reservoirs have a combined storage of 9,050 m^3.

IMAGE | WATER INFRASTRUCTURE AT THE RESERVOIR SITE.

[3] Population estimates as of Dec. 31, 2024 (a 1.3% annual growth rate is assumed), does not include "in transit population".

IMAGE | FRASER HEALTH STAFF AND STUDENTS VISITED THE WATER SYSTEM ON JUNE 13, 2024.

2.2 CWD's Operators

CWD's operators are all EOCP-certified[4] Water Distribution System Operators Level 1 (1 operator in 2024) and Level 2 (three operators). Early 2024 one Level 1 operator moved to interior of the province and recently, an Operator-in-Training has joined CWD. All operators are cross trained in various aspects of the water system operation and maintenance.

IMAGE |FROM LEFT TO RIGHT: Jason Hildebrandt (Corporate Administrator, WDSO II), Cole O'Malley (WDSO I) – left early 2024, James Wiens (Field Supervisor, WDSO II), Ryan Federau (Water Quality Technician, WDSO II), and Ryan Allen (WDSO I). In 2024, Craig Desnoyers joined CWD as operator-in-training (OIT), but he moved on early 2025. In 2025 Keegan Royal joined the team and soon hopes to obtain the designation OIT.

[4] Environmental Operators Certificate Program; for more information: http://eocp.ca.

2.3 Our Production Wells

The water system relies on four production wells for water supply, located at our Lynden and Autumn Well Fields at Lynden Street and Autumn Avenue, respectively. The production wells were constructed under CWD's Well Replacement Program (2010-2017) and have replaced aging well infrastructure. To ensure longevity and productivity of the wells, CWD implements a preventative well maintenance program with entails the routinely assessment, inspection and cleaning of the wells.

There are two production wells at each well field:

- RW 3-93/11 – in operation since 2011 (Lynden Well Field).
- RW 7-00/13 – in operation since 2013 (Lynden Well Field).
- RW 1-87/14 – in operation since 2014 (Autumn Well Field).
- RW 2-63/17 – in operation since 2017 (Autumn Well Field).

The production wells are each equipped with a submersible pump and motor with a nominal discharge rate of 50 L/s. The wells operate in rotation (between well fields and wells). The combined yield of the production wells is sufficient to meet current and future water demand.

In 2024, RW 2-63/17 was not in operation until February 20, after the submersible pump was replaced on February 6, 2024 (*the well was offline since late August of 2024*). The third well preventative maintenance was completed for RW 3-93/11 in the week of November 4, 2024 (*see **Section 4.1** – Well Monitoring & Maintenance*).

2.4 SCADA

The Supervisory Control and Data Acquisition (SCADA) system CWD has in place is integral to CWD's operation and monitoring of the water system and our natural asset (i.e.: the aquifer). Through SCADA, CWD has real-time access to pertinent operation and monitoring aspects of the water system. Monitoring includes continuous data recording of flow information, water levels in wells, reservoir levels, water system pressure, and water temperature (reservoirs and wells). SCADA data analysis, completed by our hydrogeologist, provides essential information of our supply and distribution system. Also, through SCADA, alarm features are enabled, and CWD's system operators are notified instantaneously (through their hand-held devices) in case there is a problem with the system's operation or in case of unauthorized access.

2.5 Emergency Response Planning

CWD has a comprehensive Emergency Response Plan in place, approved by FHA. Furthermore, at each pump house (Lynden and Autumn well fields), fully functioning emergency chlorinators are installed. These chlorinators are solely used in the event of a water quality related emergency. CWD is also equipped with emergency water supply provisions, which will enable us to set up temporary mobile water supply stations in the event of an emergency. The idea is that no one should have to walk more than 500 metres to get access to potable water in the event of water system failure due to a catastrophic event.

IMAGE | AUTUMN WELL FIELD: PUMP HOUSE AND RW 1-87/14.

2.6 Community Outreach

CWD organizes open houses on an annual basis, typically held during summer. CWD started with this event as an opportunity for our stakeholders to informally meet with CWD staff and Board Members, and to learn more about the water system and groundwater. At the same time, vendors and consultants CWD works with are invited showcase latest technology and educational material.

In 2024, for CWD organized the **Open House** in conjunction with the **Annual General Meeting**, held at the **Reservoir Site** (2889 Grandview Crescent) on June 27.

IMAGE | 2024 OPEN HOUSE – BARBEQUE , FOLLOWED BY THE AGM.

3. Water Supply Source Monitoring

3.1 Our Aquifer

CWD's production wells extract water from the Abbotsford-Sumas Aquifer (**Figure 1**). This trans-boundary aquifer covers an area of approximately 161 km^2 and extends from the Fraser Valley into Whatcom County of Washington State, USA. It is an unconsolidated aquifer composed of sands and gravels (glacial outwash deposits). Although the aquifer is classified as an unconfined aquifer, some parts of the aquifer are confined. CWD production wells screen the aquifer at a location characterized by an overlaying confining layer. This confining layer of low permeability consists of silt and clay (also termed an *aquitard*). The presence of such *aquitard* is advantageous from an aquifer protection point of view as the aquitard forms a barrier to possible contamination introduced at the ground surface.

The aquifer is considered high-productive. The City of Abbotsford, CWD, and Fraser Valley Trout Hatchery are the major commercial groundwater users (of the Canadian portion of the aquifer). Furthermore, agriculture relies on the aquifer for water supply. There are also a considerable number of domestic water supply wells extracting water from this aquifer. The Government of B.C. classifies the Abbotsford-Sumas Aquifer as a heavily developed and highly vulnerable aquifer. CWD has a wellhead and aquifer protection program in place to safeguard the groundwater resource.

Regarding Groundwater Licensing - ***a***s required under the Provincial *Water Sustainability Act* (WSA)[5] and *Water Sustainability Regulation*[6] CWD has applied for an existing groundwater use license (submitted early 2017). The groundwater licence application is being processed by the Ministry of Water, Land, and Resource Stewardship (WLRS). WLRS is responsible for issuing water authorizations. In 2024, CWD has been supplying additional data to WLRS in support of the groundwater licence application.

[5] http://www.bclaws.ca/civix/document/id/complete/statreg/14015
[6] http://www.bclaws.ca/civix/document/id/complete/statreg/36_2016

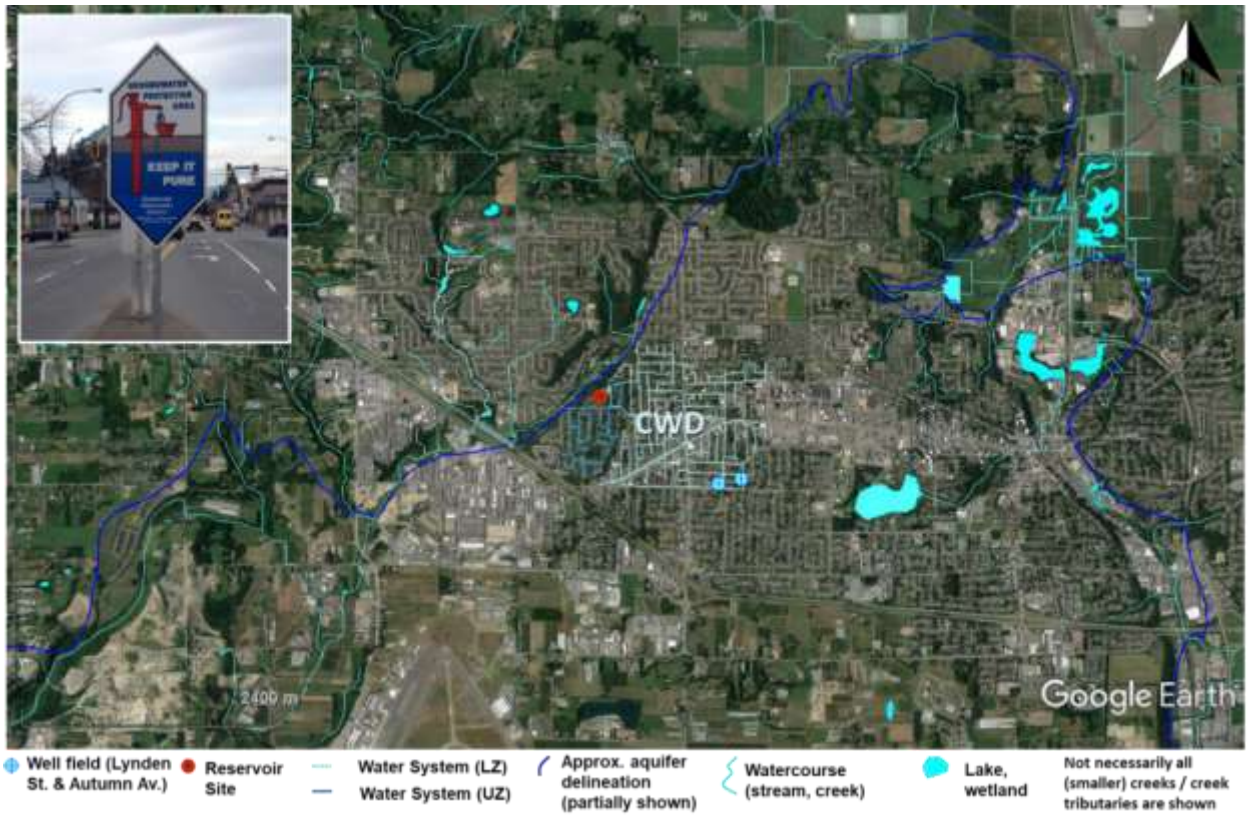

FIGURE 1 - PARTIAL DELINEATION OF THE ABBOTSFORD-SUMAS AQUIFER AND CWD'S WATER SYSTEM. INSET (PHOTOGRAPH): CLEARBROOK WATERWORKS DISTRICT IS A DESIGNATED GROUNDWATER PROJECTION AREA.

3.2 Groundwater Monitoring

CWD has a comprehensive wells and groundwater monitoring program in place for many years. Under this program, among other, collected data (recorded through SCADA) is analyzed to provide a meaningful interpretation of various data, some of which presented in this report.

2024 Groundwater Withdrawal

CWD's production wells have been successfully operating in rotation throughout 2024. **Figure 2** shows the monthly groundwater withdrawal for 2024. The figure shows the monthly volumetric contribution of each well. The total height of each bar reflects combined monthly groundwater withdrawal volume, also indicated by the red circular markers. For comparison purposes, the figure also shows total monthly groundwater withdrawal volumes of 2024 data (shown as white circular markers). (The lines which connect markers in the figure have no meaning.)

Monthly withdrawal volumes exceeding 100,000 m^3 occurred during the months March – May and November which is largely a result of water system maintenance work, with in November a prolonged overflowing of Reservoir C to manage water quality (microbiology). In July, the monthly withdrawal volume was close to 100,000 m^3. The combined summer withdrawal (May - September) was 478,034 m^3, which is 7% less than in 2023 (513,956 m^3). The 2024 annual groundwater withdrawal was 1,193,535 m^3, which is 6% more than 2023.

2024 Groundwater Production and Related Information

- Annual total production (volume): 1,193,535 m^3 (1.2 BL).
- Average monthly production: 99,461 m^3 (99.5 ML).
- Average daily production: 3,270 m^3 (3.3 MLD).
- Average instantaneous discharge rate: 50.7 L/s (182 m^3/hr).
- Combined annual hours of well operation: 6,544 hrs (17.9 hrs per day)
- Energy cost for extracting water: 3.6 ¢ per m^3

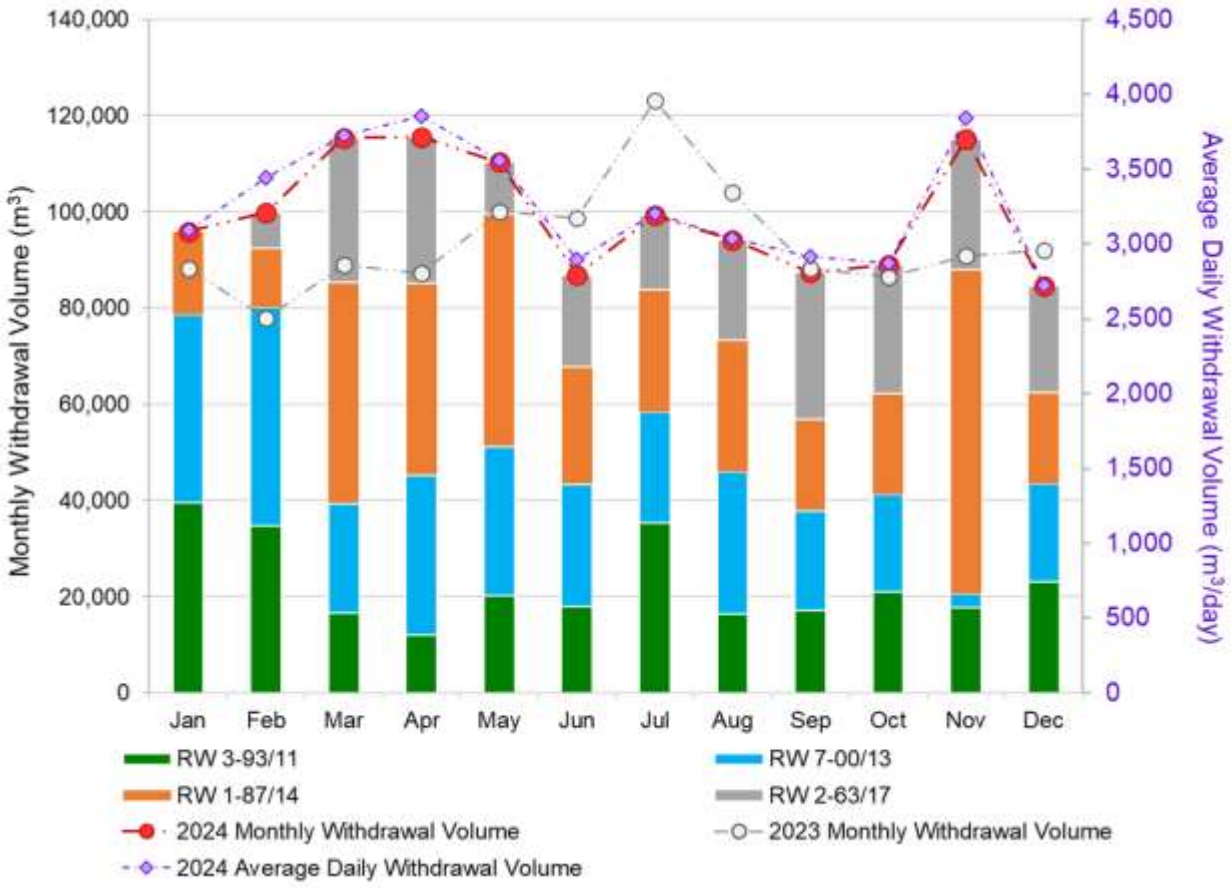

FIGURE 2 - MONTHLY GROUNDWATER WITHDRAWAL VOLUMES (2024); ALSO INCLUDED 2023 MONTHLY DATA.

Groundwater levels

CWD has a designated groundwater monitoring well, MW 6-59, at Lynden well field, connected to SCADA for continuous real-time recording of groundwater levels. The groundwater level (elevation) trend, shown in **Figure 3** (for years 2020 to 2024), provides valuable insight in the variation in groundwater levels seasonally, and between years, as observed at the designated monitoring well and representative for the local groundwater level. This is essential information for safeguarding the sustainability of the aquifer.

The sine-shaped data series illustrate seasonal variation in groundwater levels within a year and between years. The observed trend suggest:

- periods of (seasonal) **groundwater recharge** during which groundwater levels rise during **fall and spring** (of the following year), indicated by the upwards blue arrow in the figure; and
- periods of seasonal groundwater level decline (**groundwater discharge***)* which occurs every year from spring to fall*,* indicated by the downwards blue arrow in the figure.

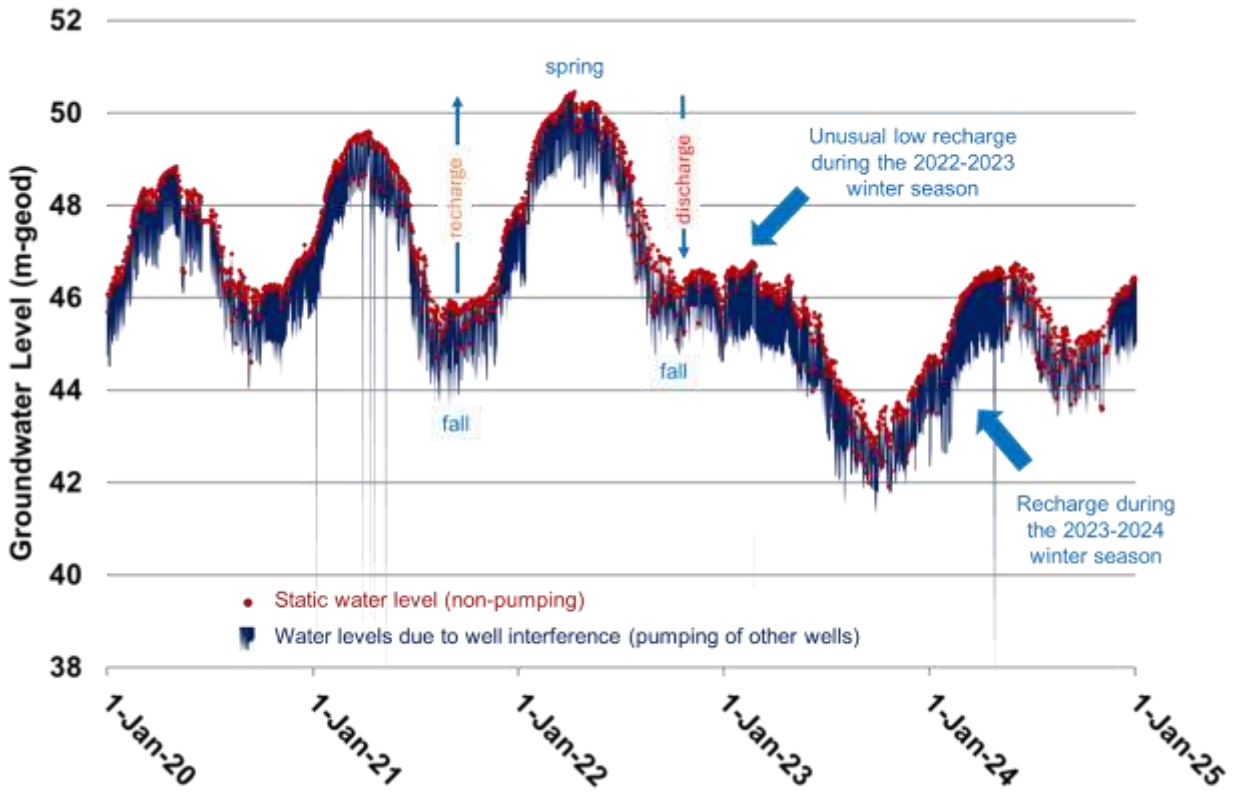

FIGURE 3 - GROUNDWATER LEVEL TRENDS OBSERVED AT CWD MW 6-59 (JAN. 1, 2020- DEC 31, 2024).

The figure shows that, observed at CWD's Lynden Well Field (MW 6-59), the seasonal recharge during the 2022-2023 winter season was unprecedentedly low: 0.62 m (in amplitude) which is the lowest on record (since 2008). This is 79.4% less than the average seasonal recharge of 3.03 m based on 2010 - 2022 data (for MW 6-59). The 2023-2024 recharge was 3.76 m (higher than the average seasonal recharge), but insufficient to restore the recharge shortfall observed during the 2022/2023 season.

In 2024, the seasonal discharge (*groundwater decline between spring and fall in terms of amplitude*) was 2.35 m which is 39% less than the amplitude observed in 2023 (3.88 m); the average seasonal discharge is 3.03 m (based on 2010 – 2022 data).

Water demand is typically the highest during the summer months (especially during periods of hot and dry weather conditions). Therefore, water conservation is essential to reduce the stress on the aquifer. CWD continues the close monitoring of the groundwater levels.

IMAGE | CWD DESIGNATED MONITORING WELL - MW 6-59.

4. Selected Work and Projects

4.1 Work and Projects completed in 2024

Water Quality Monitoring

This is an on-going activity and is addressed in **Section 5** (Water Quality Assurance) and **Section 6** (Water Quality Review).

Water System Maintenance

Water system maintenance is on-going throughout the year. The following is a list of selected maintenance work (and related tasks) completed in 2024:

General

- ✓ 414+ work orders were completed; 253 BC#1 calls were marked out; and 8 emergencies after hour callouts were responded to.
- ✓ 48-hour shutoff notices were hand-delivered throughout the year and services were cut off as required.
- ✓ Response to three frozen residential service lines (all on the customer site of the water meter).
- ✓ Reservoir C was completed drained, following the water quality issue in November, and has been out of service since then.
- ✓ 30 new traffic cones were purchased replacing old ones.
- ✓ A new backhoe was purchased and one of the fleet pickups was replaced with an electrical vehicle.

Hydrants

- ✓ 142 fire hydrants and water system end points were flushed.

Water meters

- ✓ Meter reading was completed quarterly (conventional meters).
- ✓ After each reading cycle high and low readings were investigated.

Service lines

- ✓ 12 new 25.4 mm (1 inch) service lines were installed.
- ✓ 2 new 50 mm (2 inch) and 1 new 100 mm (4 inch) services lines were installed.

Water Main / Water line Repairs & Leak Detection

- ✓ A water main leak was repaired 2865 Justice Way.
- ✓ A water service line was repaired at 2640 Moorland Street after the developer dug through the water service line.
- ✓ Water flow was restored to 31466 Aero Lane; the issue was on the customer site of the water meter.
- ✓ A service line leak was repaired at 2464 Sunnyside Place.

- ✓ A water main break was repaired near 2728 Clearbrook Road; the road pavement (restoration) was completed by the City of Abbotsford.

Equipment Checks & Maintenance

- ✓ Month end duties were completed at the end of each month. These duties include running the site backup generators, plus running all 4 of our mobile generators, checking all the vehicles and reviewing a tool list for each vehicle.
- ✓ Maintenance was completed on all of our equipment in January as well as any required maintenance throughout the year.
- ✓ The annual inventory was completed in December.
- ✓ The stainless-steel standpipes at the well fields were manually drained as well as hydrant C10 prior to the freezing temperatures; the drinking fountain at Spud Murphy Park is taken offline during the winter months.
- ✓ Cleaning of the pump houses and work yard as needed throughout the year.
- ✓ Vehicle maintenance was completed as needed throughout the year.

IMAGE | WATER SYSTEM FLUSHING IN PROGRESS.

Reservoir Site, Pump Stations and Well Fields (General)

- ✓ Pacific Gen Care Ltd. (Abbotsford) serviced all three of CWD's backup generators.
- ✓ Fire Valley Fire Protection tested all the fire alarms at all the sites and inspected and replaced fire extinguishers as needed.
- ✓ Pump speed tests were completed for all four production wells.
- ✓ The capacitors in the variable frequency drive (VFD) of RW 7-00/13 were replaced.
- ✓ A stainless-steel screen was added to the Reservoir C overflow pipe within the reservoir.

IMAGE | WATER MAIN LEAK REPAIR, ON CLEARBOOK ROAD, SOUTH OF OLD YALE ROAD.

Water Main Construction – Pipe Replacement Program (2024 Capital Project)

The replacement and upgrade along Conrad Avenue and Carla Court entailed:

- Conrad Avenue - replacement of 105 m of 150 mm (6 inch) asbestos cement (AC) pipe with 250 mm (10 inch) C909 pipe (Bionax® PVCO Pipe).
- Carla Court - 91 m of 100 mm (4 inch) AC pipe with 200 mm (8 inch) C909 pipe (Bionax® PVCO Pipe).

The project also included the installation of 2 new fire hydrants and 15 new 25 mm (1 inch) services lines (replacements). The project was entirely completed in-house. Following installation, road pavement was completed (contracted out).

IMAGE | 2024 PIPE REPLACEMENT ALONG CARLA COURT - 200-MM BIONAX© PIPE WAS INSTALLED.

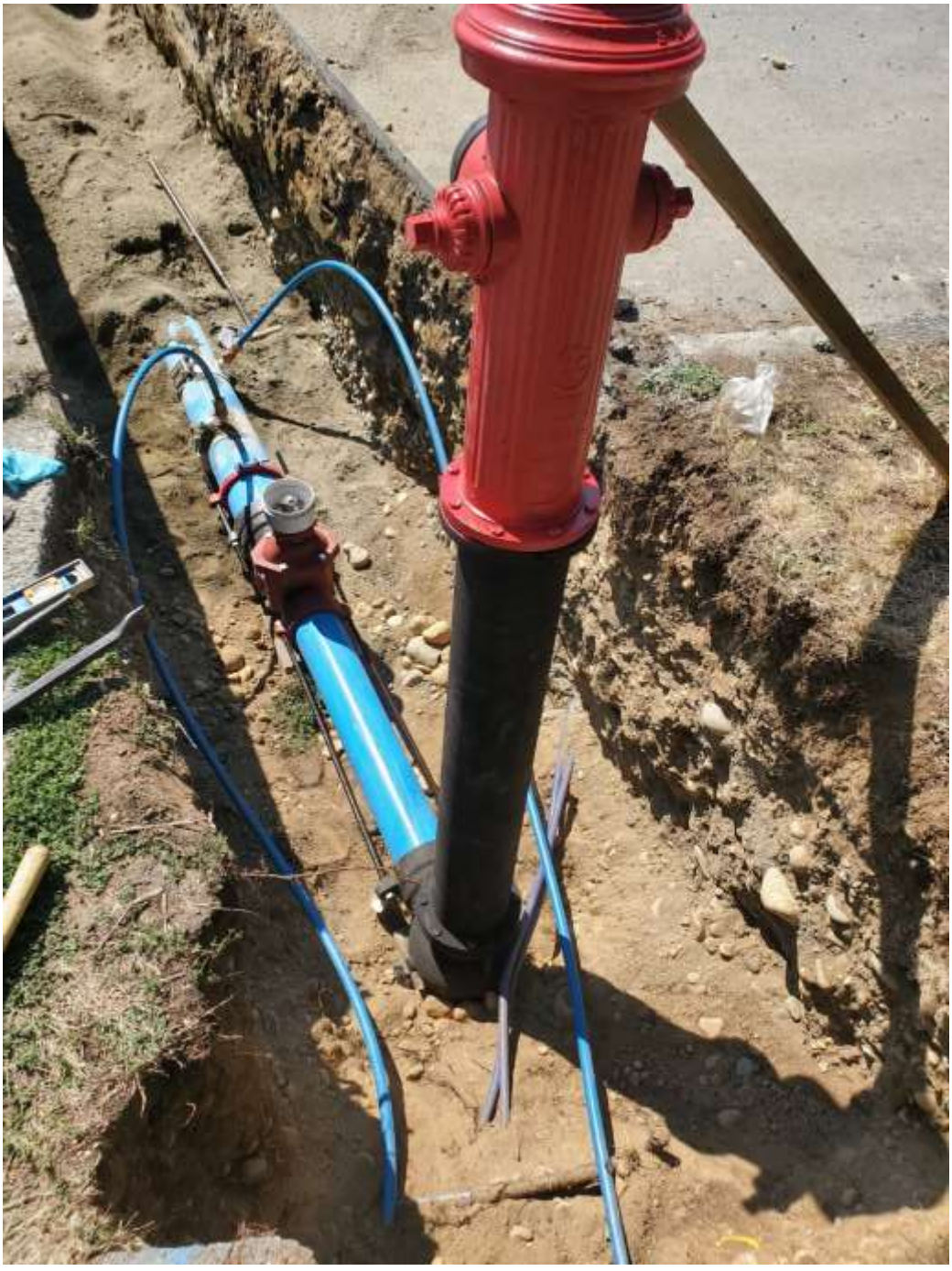

IMAGE | 2024 PIPE REPLACEMENT INCLUDED THE INSTALLATION OF 2 NEW FIRE HYDRANTS.

Reservoir C Draining & Inspection

Reservoir C was draining following the water quality concerns of the reservoir. A new *Davit arm* was purchased and installed to facilitate safe entry into the reservoir to complete inspection of the integrity of the reservoir. CWD operators investigated the integrity of the reservoir and it was found that the roof (dome) of the reservoir has evidence of small cracks, identified as the possible cause of the bacteriological contamination (see **Section 5.2**).

Work Pertaining to New Developments

- 15 Capital Expenditure Charges (CEC) were completed.
- 3 fire flow tests were completed for potential future developments.
- Review of proposed development design drawings throughout the year. All development drawings are approved by CWD's corporate administrator, Jason Hildebrandt, and Field Supervisor (James Wiens) before they can receive final approval.
- Completion of daily site inspections by James Wiens pertaining to water main installation work for the 32110 Hillcrest Avenue Development; pipe installation is carried by a contractor of the developer.
- Completion of daily inspections by James Wiens for the off-site water main installed for a town house development at 31981 Coral Avenue; pipe installation is carried by a contractor of the developer.
- Thorough flushing and disinfection are completed by the contractor for each new tie-in to the water system.

Advanced Metering Infrastructure (AMI) Replacement Program (2024 Capital Project)

- 328 water meters were replaced.
- 2 AMI repeaters were installed within dead spots to increase reception.

Pumping Systems

- A new submersible pump was installed in RW 2-63/17 by Fyfe Well & Water Services.

IMAGE | INSIDE THE PUMP HOUSE SHOWING THE WATER MANIFOLD WITH SAMPLE STATION.

Groundwater Monitoring & Well Assessments

Pertinent information is recorded through SCADA pertaining to the operations of the wells, groundwater levels and temperature and reservoir operation. In addition to the automatic recording of data through SCADA, field staff completes daily pump checks and manual groundwater readings on a bi-weekly basis for selected monitoring well locations. CWD also monitors sand intake of the production wells by means of a sand tester connected to the water manifold.

Furthermore, under the guidance of KWD, various tests are completed on the production wells pertaining to well hydraulic performance and pump / motor performance. Step-drawdown pumping tests (for assessing well hydraulic performance) and pump speed tests (submersible pump / motor performance) were completed for all four production wells

These tests allow for a better understanding of possible changes in well and pumping system performance of time. This information is relevant to the timely scheduling of well maintenance (well rehabilitation) and replacement of the submersible pump and / or motor.

2024 results suggests that the pump-motor performance and well hydraulic performance are within acceptable parameters. Sand production of the wells is very low, meeting industry standard specifications.

IMAGE | WATER LEVELS ARE TAKEN BY CWD STAFF DURING WELL TESTING.

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RW 3-93/11 Preventative Well Maintenance

CWD has a comprehensive well maintenance program in place which entails the implementation of preventative well rehabilitation every 4 to 5 years for each production well (on a rotational basis). During such well rehabilitation specific measures are employed to 'clean' the well of any accumulated materials (e.g., mineral deposits and biomass) which causes clogging of the well screen openings (slots) which may impact well performance. Goals of a consistent and timely implementation of the preventative well maintenance program are to ensure the wells' productivity and longevity.

In the week of November 4, 2024, the third preventative maintenance was completed for RW 3-93/11, located at Lynden Well Field. The work was completed by Fyfe Well & Water Services; KWD provided the project coordination and completed the reporting.

The well rehabilitation program included:

- ✓ Downhole video inspections before and after the preventative maintenance work
- ✓ Mechanical cleaning (brushing).
- ✓ Chemical rehabilitation (application of acid descaler).
- ✓ Flushing / removal of dissolved incrustations.
- ✓ Inspection of the pumping equipment.

The preventative maintenance for RW 3-93/11 *was effective in removing most of the observed incrustations (mostly precipitated iron).*

IMAGE | DOWNHOLE VIDEO INSPECTION EQUIPMENT (LEFT) AND VIDEO EXCERPT (RIGHT) - THE CAMERA IS DIRECTED TOWARDS THE WELL SCREEN AND GEOLOGICAL FORMATION.

4.2 Training

In 2024, field staff followed the following courses to stay current on knowledge and certification:

- All field staff attended a one-day course on reservoir cleaning and maintenance (online course by the BC Water and Waste Association, BCWWA).
- All field staff and Jason Hildebrand participated in a two-day course on control valves, organized by Summit Valves and Controls Inc.; Day 2 was hands-on training where attended rebuild two control valves (same as valves installed at CWD's reservoir site).
- All field staff attended a one-day course on Water Distribution and Best Practices organized by the BCWWA.

IMAGE | 2024 PIPE REPLACEMENT AND FIRE HYDRANT INSTALLATION ALONG CONRAD AVENUE AND CARLA COURT.

4.3 Scheduled Work for 2025

The following (selected) projects are scheduled for 2025:

Flushing Program

- Regular flushing is scheduled for spring (was completed in May).
- Uni-Directional Flushing is scheduled in fall.

Pipe Replacement & Upgrade Program

- Oversight of contractor retained by CWD to install watermain sections along Clearbrook Road (70 m of water main).

Reservoir Site

- Restoration (sealing) of the dome (roof) of Reservoir C; this will be completed in-house over the summer months.
- Installation of a bypass line at Reservoir B for isolating the pump station for repairs or upgrades.

AMI Meter Replacement (Capital Project)

- Install the remaining AMI meters (about 400).

Inspections

- Daily site inspection as required on any developer installed water mains within our district.

Fire Hydrant Maintenance

- 207 fire hydrant will be rebuilt.
- Repainting the fire hydrants and renumbering as required.

Preventative Well Maintenance Program

- Preventative maintenance for **RW 2-63/17** is scheduled for this year. This will be the second preventative rehabilitation since being commissioned in 2017.

5. Water Quality Assurance

5.1 Water Quality Monitoring

Providing safe, reliable, and clean water to our rate payers remains CWD's key responsibility. We take pride in providing drinking water of the highest quality at a reasonable cost, thereby meeting water demand, complying with provincial regulations, and working responsibly to protect our aquifer.

According to **Section 15 (b) of the Drinking Water Protection Act**, a water supplier must make available to the public the results of the water quality monitoring, and, **in accordance with Section 11 of the Drinking Water Protection Regulation**[7], that this is done within 6 months of the end of the calendar year.

Routine Monitoring - Microbiology (Distribution, Storage, and Supply Source)

The Drinking Water Protection Regulation (DWPR) sets water quality standards for potable water (selected microbiological constituents in drinking water). The Drinking Water Act and Regulation are enforced for community water systems in British Columbia[8]. Schedule B of the DWPR establishes guidelines for water sampling frequency of microbiological parameters, and for water utilities serving a population of 5,000 to 90,000 people, 1 monthly sample per 1000 of population is required. In case of CWD, the minimum requirement would be 11 monthly samples (the estimated population is 10,534 people) and a total of 132 samples.

CWD routinely (weekly) monitors the water quality of our water supply and distribution system: CWD has 20 water sampling locations throughout the District, in addition to our four (4) production wells and two (2) reservoirs, which, on a rotating basis, are sampled and analyzed for microbiological parameters: *Total Coliforms* and *E. coli*. Water samples are analysis in-house as well as (mandatory) by the BC Centre of Disease Control (BCCDC).

The results of the 2024 microbiological water quality samples submitted to the BC Center for Disease Control (BCCDC) by Fraser Health are included as **Appendix C**. The reports show that, routinely, **307 water samples** were analyzed: *280 samples are from designated sample stations and the 2 reservoirs; and 27 samples are from the production wells*. Results suggest that, of the 280 samples, 10.36% of the total samples contained total coliform, with 6 consecutive samples that contained total coliform. One sample contained E.coli (1 positive count), collected from Reservoir C on October 28, 2024. Following this results, CWD implemented corrective action, discussed in **Section 5.2** (Water Quality Technician's Report 2024). Additional water sampling and analysis was completed (in-house and by the BCCDC).

CWD's groundwater sources shows 100% absence of the microbiological indicators. This suggests that raw groundwater meets the DWPR.

[7] http://www.bclaws.ca/civix/document/id/loo71/loo71/10_200_2003
[8] Environmental health officers routinely inspect, sample, and assess community water systems for compliance with the Drinking Water Protection Act and Regulation (www.fraserhealth.ca).

Water Chemistry

Furthermore, on July 24 and December 6, 2024, CWD collected water samples from the source (i.e.: the production wells), from Reservoir B and two sample stations in the District. The water samples were submitted to an accredited water testing laboratory (Element, located in Surrey) for potability analysis (**Section 6.1**).

Biological Activity Reaction Tests (BART)

In April water samples were collected for (BART). BART is an industry accepted method for determining the presence of so-called nuisance bacteria (i.e., there is no health concern associated with the detection of such bacteria). BART results are presented in **Section 6.2**.

pH Monitoring

CWD has installed pH meters connected to the water manifold which allows for continuous monitoring. The pH meters we assembled, installed, and calibrated by CWD's Water Quality Technician.

IMAGE | IN ADDITION TO WATER TESTING – IN HOUSE MICRO BIOLOGICAL ANALYSIS, WEEKLY COMPLETED BY THE WATER QUALITY TECHNICIAN, IN ADDITION TO WEEKLY WATER SAMPLES SUBMITTED TO THE BCCDC.

5.2 Water Quality Technician's Report 2024

2024 was without a doubt the most noteworthy year in recent CWD history with regards to water quality, and many of our plans and preconceived notions were put to the test.

In May of 2024 CWD began a pipe project that would see the replacement of roughly 200 meters of 100mm and 150mm AC pipe along Conrad Avenue and Carla Court water main. An old slide gate hydrant was replaced with a new compression style hydrant, and another of these hydrants was added to the end of Carla Court water main. The pipe was installed without incident, and after pressure testing and chlorination, passed bacteriological testing and was tied into the system.

In late October and early November, we received several positive Total Coliform results from water samples submitted to the BCCDC, as well as E. coli (1 count) in non-consecutive water samples taken from Reservoir C. We worked with Fraser Health to come up with corrective action, which involved issuing a Boil Water Advisory, turning on our emergency chlorinators, and supplementary bacteriological sampling. The Boil Water Advisory was issued on November 9th along with turning on the chlorinators, and after proving the system safe via the aforementioned extra sampling, was rescinded 5 days later on November 13th. Our emergency chlorinators remained online until November 27th, whereupon we had satisfied Fraser Health's conditions (determination of the source of contamination, along with a comprehensive plan to correct it). At no point was any E. coli discovered in the distribution system, based on a total of 208 water samples daily collected after the initial E. coli detection in the reservoir. Upon inspection of Reservoir C, small cracks were observed on the roof (dome), identified as the possible cause of the bacteriological contamination.

Given the aforementioned water quality issue, and the time and resources required to correct it, BART was not performed in Q4 2024. BART continued as scheduled in Q1 2025, with nothing unusual outside of baseline levels being observed.

Well RW 3-93/11 underwent preventative rehabilitation in 2024 and was found to have a faulty check valve during maintenance. The Lynden well site was left offline for several weeks between November 4th, and November 26th while we awaited the arrival and installation of the new check valve.

A total of 414 in-house water samples were taken in 2024, owing largely to the enhanced sampling schedule undertaken in November. Along with this, 307 samples were submitted to the BCCDC, and 149 submitted to Element Labs, again, mostly due to the extraneous sampling in November; we typically only use Element labs to perform our bi-annual full chemical analysis, and any water main upgrade bacteriological samples.

In February of 2025, I was fortunate enough to attend and deliver a presentation at the Berkeley Springs International Water Tasting competition in Berkeley Springs, West Virginia. While CWDs entry failed to place, I was able to network with local operators and water professionals, while discussing pressing concerns that we all experience, despite being in entirely different countries, located across a continent form each other.

2025 will see CWD repairing the roof on Reservoir C, which is likely to consist of a potable water (NSF61) coating applied to the entire outside of the roof to facilitate sealing of the cracks. After the repair, the reservoir will be rinsed to remove any sediment on the floor, and filled, chlorinated, drained, and tested (as per AWWA C652 requirements) before bringing it back online. This incident tested our combined knowledge and written procedures in a way that tabletop exercises simply cannot. I feel our

response was thoroughly reasoned and well executed, but we would be remiss to not draw upon the experiences we gained through this incident, in order to better ourselves and our procedures, should we experience anything of this sort in the future.

Ryan Federau

Water Quality

Clearbrook Waterworks District

IMAGE | 2024 PIPE REPLACEMENT ALONG CONRAD AVENUE AND CARLA COURT.

6. Water Quality Review

6.1 Water Quality Review

Water samples were collected by CWD from the **supply source** (production wells RW 3-93/11, RW 7-00/13, RW 1-87/14, RW 2-63/17), and Reservoir B[9] on July 24, 2024, and December 6, 2024. Furthermore, water samples were collected from two sample stations in the District (2464 Sunnyside and 32350 Diamond Crescent). The water samples were analyzed by Element, an accredited laboratory located in Surrey B.C. **Table 1** summarizes the results of the water quality analysis, which are evaluated towards the most recent edition of the Canadian Drinking Water Guidelines (Health Canada, 2025). Water quality analysis includes physical, chemical and microbiological parameters. The reports prepared by Element are included as **Appendix D**.

Results of the water analysis for the four replacement wells, reservoir and two sample stations suggest that the water quality meets the Canadian Drinking Water Guidelines requirements in terms of Maximum Acceptable Concentrations (MAC) and Aesthetic Objective (AO), with exception of:

- ✓ Manganese concentration of 0.068 mg/L and 0.085 mg/L was reported for the water samples collected from **RW 1-87/14**, on July 24 and December 6, respectively: concentrations value exceeds the AO of 0.02 mg/L - *historically, **RW 1-87/14** shows a tendency towards elevated manganese concentration but has always been below* MAC.
- ✓ Total coliform of 1 MPN / 100 mL was reported for the water sample collected at **sample station** 2464 Sunnyside Pl, exceeding the MAC of 0 MPN / 100 mL (2 more positive counts were reported in 2024 during routine water sampling (see range reports in **Appendix C**); no positive counts have been reported since the last occurrence in 2024.

The Canadian Drinking Water Guidelines Summary Table, available at https://www.canada.ca, provides information for the various analyzed water quality parameters pertaining to guideline limits, common sources (of the parameter), and health considerations.

Based on the reported results for the **production wells**:

- ✓ pH values range between 7.13 (**RW 3-93/11**) to 7.66 (**RW 1-87/14**) which suggests that the sampled water is overall basic (pH > 7.0).
- ✓ Water hardness (as $CaCO_3$)[10] ranges from 79 mg/L (**RW 7-00/13**) to 133 mg/L (**RW 1-87/14**) and suggests moderately hard to hard water at all four production wells (Moderately hard water ranges from 60 mg/L to less than 120 mg/L; hard water ranges from 120 mg/L to less than 180 mg/L).
- ✓ Turbidity values range from < 0.10 NTU (**RW 3-93/11** & **RW 7-00/13**) to 0.32 NTU (**RW 2-63/17**).

[9] Water samples were collected and submitted to Element by Ryan Federau (CWD Water Quality Technician).
[10] Hardness is evaluated based on the concentration of calcium carbonate ($CaCO_3$), because calcium (Ca^{-2}) and carbonate (CO_3^{-2}) are the dominant ions in most hard waters.

Regarding turbidity: Health Canada has set water treatment limits regarding turbidity (not applicable to CWD's water system). Even so, for good operation of the distribution system, it is recommended (for systems that use groundwater) that the water entering the distribution system has turbidity levels of 1.0 NTU or less (Health Canada 2025).

IMAGE | WATER FROM OUR SUPPLY SOURCE (RW 7-00/13).

Summary

- Based on the results of the water quality analysis CWD's drinking water is safe and does not require any treatment.
- Based on the evaluation of hardness, CWD'S drinking water does not require any water softeners.

Contact CWD office for any questions regarding the quality of our drinking water.

Clearbrook
WATERWORKS DISTRICT

Table 1

Water Quality

Results

Analyte	Units	Guideline Limit	Guideline Type	Analysis						
				Raw water (Matrix: Drinking Water)						
Sample Description				**RW 3-93/11**	**RW 7-00/13**	**RW 1-87/14**	**RW 2-63/17**	**Reservoir B**	**32350 Diamond Cres.**	**24645 Sunnyside Pl.**
Well ID no.				22547	22521	22595	23702	-	-	-
Sample date				2024-07-24	2024-07-24	2024-07-24	2024-07-24	2024-07-24	2024-07-24	2024-07-24
Sample time				2:02 PM	1:48 PM	2:26 PM	2:12 PM	11:10 AM	11:49 AM	11:36 AM
Lot ID (Exova)				1748096	1748096	1748096	1748096	1748096	1748096	1748096
Report number				3028802	3028802	3028802	3028802	3028802	3028802	3028802
Report date				2024-07-29	2024-07-29	2024-07-29	2024-07-29	2024-07-29	2024-07-29	2024-07-29
Ref. number				9420648	9420649	9420646	9420647	9420645	9420644	9420643
Metals Extractable										
Aluminum	mg/L	0.1	OG	<0.001	<0.001	<0.001	0.002	0.002	0.001	0.001
Antimony	mg/L	0.006	MAC	0.00004	0.00004	0.00012	0.00008	0.00007	0.00011	0.00007
Arsenic	mg/L	0.010	MAC	0.0004	0.0003	0.0015	0.0007	0.0007	0.0012	0.0008
Barium	mg/L	1	MAC	0.0074	0.0068	0.025	0.010	0.014	0.018	0.014
Boron	mg/L	5	MAC	0.011	0.011	0.028	0.016	0.020	0.027	0.018
Cadmium	mg/L	0.005	MAC	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001
Chromium	mg/L	0.05	MAC	0.00015	0.00019	<0.00005	0.00010	0.00011	<0.00005	0.00013
Copper	mg/L	1 AO; 2 MAC		0.0009	0.0019	<0.0005	<0.0005	<0.0005	0.0051	0.0043
Lead	mg/L	0.01	MAC	0.00006	0.00024	<0.00001	<0.00001	<0.00001	0.00078	0.00071
Selenium	mg/L	0.05	MAC	0.0003	<0.0002	0.0004	0.0007	0.0003	0.0005	0.0003
Strontium	mg/L	7.0	MAC	0.13	0.12	0.11	0.090	0.14	0.11	0.14
Uranium	mg/L	0.02	MAC	0.00004	0.00002	0.00020	0.00006	0.00011	0.00022	0.00013
Vanadium	mg/L			0.00057	0.00054	0.00052	0.00046	0.00052	0.00059	0.00058
Zinc	mg/L	5.0	AO	0.007	0.020	0.0013	0.0014	0.0009	0.011	0.0180
Physical and Aggregate Properties										
Colour	Colour units	15	AO	<5	<5	<5	<5	<5	<5	<5
Turbidity	NTU	0.1	OG	<0.10	<0.10	**0.16**	**0.25**	**0.13**	<0.10	**0.11**
Routine Water										
pH	-	7.0-10.5		7.27	7.22	7.64	7.46	7.54	7.65	7.54
Electrical Conductivity	µS/cm at 25 °C			301	266	316	230	324	313	322
Calcium	mg/L			30	26	33	24	34	33	34
Iron	mg/L	0.3*	AO	<0.004	<0.004	0.01	0.037	0.008	0.006	0.01
Magnesium	mg/L			7.1	6.3	8.5	6.7	8.2	8.0	8.0
Manganese	mg/L	0.02 AO; 0.12 MAC		<0.001	<0.001	**0.068**	0.006	0.004	0.016	0.002
Potassium	mg/L			1.7	1.4	2.9	1.7	2.2	2.6	2.1
Silicon	mg/L			10	10	8.6	9.3	9.6	8.5	9.4
Sodium	mg/L	200	AO	12	8.9	16	8.3	13	15	13
T-Alkalinity	mg/L			47	40	96	61	69	95	70
Chloride	mg/L	250	AO	43.8	38.3	22.0	15.9	38.5	22.3	37.8
Fluoride	mg/L	1.5	MAC	<0.01	<0.01	0.02	0.01	<0.01	0.02	<0.01
Nitrate - N	mg/L	10	MAC	2.53	2.52	0.75	1.47	1.60	0.78	1.57
Nitrite - N	mg/L	1	MAC	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sulfate	mg/L	500	AO	16.2	14.9	24.1	21.2	20.9	24.1	21.1
Hardness	mg/L			103.00	90	118	88	119	115	118
Total Dissolved Solids	mg/L	500	AO	177.00	158	191	147	192	188	191
Microbiology										
Total Coliform	MPN/ 100 mL	0 per 100 mL	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**1**
Escherichia coli	MPN/ 100 mL		MAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Heterotrophic Count	MPN / mL	-		2	<2.0	<2.0	<2.0	<2.0	2	2.0

MAC = Maximum Acceptable Concentration; AO = Aesthetic Objective; OG = Operator Guideline for Water Treatment Plants

* Iron AO has been updated to 0.1 mg/L in 2025.

Red = Exceeding MAC

Orange = Exceeding AO

Green - Exceeding OG

mg/L = milligrams per litre

MPN = Most Probable Number

Clearbrook
WATERWORKS DISTRICT

Table 1

Water Quality

Results, *cont'd*…

Analyte	Units	Guideline Limit	Guideline Type	Analysis						
				Raw water (Matrix: Drinking Water)						
Sample Description				**RW 3-93/11**	**RW 7-00/13**	**RW 1-87/14**	**RW 2-63/17**	**Reservoir B**	**32350 Diamond Cres.**	**2464 Sunnyside Pl.**
Well ID no.				22547	22521	22595	23702	-	-	-
Sample date				2024-12-06	2024-12-06	2024-12-06	2024-12-06	2024-12-06	2024-12-06	2024-12-06
Sample time				9:18 AM	9:01 AM	9:48 AM	10:04 AM	8:08 AM	10:18 AM	8:21 AM
Lot ID (Exova)				1782171	1782171	1782171	1782171	1782171	1782171	1782171
Report number				3087296	3087296	3087296	3087296	3087296	3087296	
Report date				2024-12-10	2024-12-10	2024-12-10	2024-12-10	2024-12-10	2024-12-10	2024-12-10
Ref. number				9696982	9696983	9696980	9696981	9696984	9696985	9696986
Metals Extractable										
Aluminum	mg/L	0.1	OG	0.002	<0.001	<0.001	0.001	0.004	<0.001	0.006
Antimony	mg/L	0.006	MAC	0.00003	0.00002	0.00008	0.00007	0.00007	0.00007	0.00008
Arsenic	mg/L	0.010	MAC	0.0004	0.0004	0.0019	0.0008	0.0009	0.0009	0.0010
Barium	mg/L	1	MAC	0.0078	0.0063	0.030	0.014	0.016	0.015	0.016
Boron	mg/L	5	MAC	0.011	0.011	0.042	0.020	0.020	0.020	0.020
Cadmium	mg/L	0.005	MAC	0.00004	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001
Chromium	mg/L	0.05	MAC	0.00023	0.00030	<0.00005	0.00020	0.00020	0.00017	0.00041
Copper	mg/L	1 AO; 2 MAC		0.0013	0.0018	<0.0005	<0.0005	<0.0005	0.0027	0.0078
Lead	mg/L	0.01	MAC	0.00027	0.00016	<0.00001	<0.00001	<0.00001	0.00029	0.00050
Selenium	mg/L	0.05	MAC	0.0003	0.0002	<0.0002	0.0005	0.0004	0.0004	0.0004
Strontium	mg/L	7.0	MAC	0.14	0.11	0.13	0.100	0.12	0.11	0.12
Uranium	mg/L	0.02	MAC	0.00004	0.00001	0.00032	0.00011	0.00011	0.00008	0.00012
Vanadium	mg/L			0.00053	0.00051	0.00066	0.00045	0.00048	0.00047	0.00050
Zinc	mg/L	5.0	AO	0.015	0.012	0.0007	0.0010	0.0018	0.007	0.0210
Physical and Aggregate Properties										
Colour	Colour units	15	AO	<5	<5	<5	<5	<5	<5	<5
Turbidity	NTU	0.1	OG	**0.21**	**0.2**	**0.32**	**0.20**	**0.14**	**0.11**	**0.18**
Routine Water										
pH	-	7.0-10.5		7.13	7.22	7.66	7.54	7.50	7.48	7.59
Electrical Conductivity	µS/cm at 25 °C			321	242	395	277	308	305	308
Calcium	mg/L			30	23	37	29	32	28	32
Iron	mg/L	0.3*	AO	<0.004	<0.004	0.015	0.007	<0.004	<0.004	0.012
Magnesium	mg/L			7.2	5.5	9.7	7.4	7.8	6.8	7.6
Manganese	mg/L	0.02 AO; 0.12 MAC		0.01	0.002	**0.085**	0.007	0.009	0.003	0.006
Potassium	mg/L			1.5	1.2	3.2	1.9	2.0	1.7	2.1
Silicon	mg/L			10	10	7.5	8.8	9.0	9.2	8.9
Sodium	mg/L	200	AO	12	8.3	24	10.0	13	11	13
T-Alkalinity	mg/L			46	40	126	76	73	70	77
Chloride	mg/L	250	AO	52.3	33.9	32.9	21.0	34.5	35.1	31.8
Fluoride	mg/L	1.5	MAC	0.02	0.01	0.03	0.02	0.02	0.02	0.02
Nitrate - N	mg/L	10	MAC	2.65	2.55	<0.01	1.11	1.50	1.62	1.36
Nitrite - N	mg/L	1	MAC	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sulfate	mg/L	500	AO	16.3	14.1	25.5	22.6	20.7	20.4	21.3
Hardness	mg/L			104	79	133	104	111	98	111
Total Dissolved Solids	mg/L	500	AO	186	148	229	167	185	177	184
Microbiology										
Total Coliform	MPN/ 100 mL	0 per 100 mL	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Escherichia coli	MPN/ 100 mL		MAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Heterotrophic Count	MPN / mL	-		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0

MAC = Maximum Acceptable Concentration; AO = Aesthetic Objective; OG = Operator Guideline for Water Treatment Plants

* Iron AO has been updated to 0.1 mg/L in 2025.

Orange = Exceeding AO

Green - Exceeding OG

mg/L = milligrams per litre

MPN = Most Probable Number

6.2 Biological Activity Reaction Test

BART is a method for analyzing several bacterial communities that can cause problems for water quality (e.g.: turbidity), aesthetics (e.g.: odour, discoloration, cloudiness) and water infrastructure (e.g.: corrosion). The following bacterial communities were analyzed this year for each production well:

- **Iron Related Bacteria** (IRB)
- **Sulphate Reducing Bacteria** (SRB)
- **Slime Forming Bacteria** (SLYM)
- **Heterotrophic Aerobic Bacteria** (HAB).

These four indicators are typically used for water supply wells to obtain insight into corrosion risk and/or well screen clogging risk (a quantitative diagnostic). High aggressivity of these bacteria could also suggest masking of coliform bacteria[11].

BART was completed in April 2024. **Table 2** summarizes the results using color coding in terms of level of aggressivity of evaluated bacteria for each well: *in the well* (time t = 1 min of pumping), *just outside the well screen* (t = 10 min of pumping), and in the *geological formation* (t = 60 min of pumping). We included orange color coding to reflect the borderline between medium and high aggressivity (applicable for IRB).

BART analysis shows that reactions occurred mostly for **IRB** and **HAB**, as well as **SLYM** for 3 wells. Typically, **IRB** was found to be ranging from low to high aggressivity with **RW 1-87/14** showing high aggressivity for all three samples. **HAB** was found to be mostly low in aggressivity, with one instance of medium aggressivity in the well (**RW 1-87/14**) and high aggressivity in the well observed for **RW 2-63/17**. Regarding **SLYM**, there was one sample with low aggressivity and one sample with moderate aggressivity. **SRB** was not found (i.e., no reactions observed).

Overall, and historically, IRB and HAB are the most common bacteria (microbes) identified during the tests (i.e.: show borderline or high aggressivity). Generally speaking, microbes are ever present in a well environment, and based on our long-term implementation of BART, the degree of aggressivity of the various bacterial communities varies over time for each of the wells.

BART results in combination with well hydraulic performance data and the interior condition of the well and well screen (i.e.: degree of plugging), observed during the completion of a downhole video inspections, determine well rehabilitation requirements (timing and approach).

[11] http://www.dbi.ca/BARTs/App-Guide.html.

Table 2 - BART Results (2024)

Tester	Spring 2024			Fall 2024		
	Well (t = 1 min)	Outside well screen (t = 10 min)	Formation (t = 60 min)	Well (t = 1 min)	Outside well screen (t = 10 min)	Formation (t = 60 min)
Bacterial communities	RW 3-93/11 - Sample Date: April 30, 2024			RW 3-93/11		
IRB	6 BR, [550]	7 BR, [137]	5 BR [2.2 T]	BART was not completed in fall		
SRB	-	-	-			
SLYM	-	3 PB, [70 T]	-			
HAB	5 DO [1.59 T]	5 DO [1.59 T]	7 DO [155]			
Bacterial communities	RW 7-00/13 - Sample Date: April 23, 2024			RW 7-00/13		
IRB	4 FO [8.82 T]	7 BR [137]	7 BR [137]	BART was not completed in fall		
SRB	-	-	-			
SLYM	-	3 PB, [70 T]	3 PB, [70 T]			
HAB	5 DO [1.59 T]	5 DO [1.59 T]	7 DO [155]			
Bacterial communities	RW 1-87/14 - Sample Date: April 30, 2024			RW 1-87/14		
IRB	4 BR [8.82 T]	4 BR [8.82 T]	4 BR [8.82 T]	BART was not completed in fall		
SRB	-	-	-			
SLYM	-	-	-			
HAB	4 DO [7.44 T]	5 DO [1.59 T]	7 UP [155]			
Bacterial communities	RW 2-63/17 - Sample Date: April 23, 2024			RW 2-63/17		
IRB	4 BR, 6 BL [8.82 T]	4 FO [8.82 T]	7 BR [137]	BART was not completed in fall		
SRB	-	-	-			
SLYM	3 PB [70 T]	3 PB [70 T]	3 PB [70 T]			
HAB	2 DO [454 T]	5 DO [1.59 T]	7 DO [155]			

Key:

- **High aggressive**
- **Borderline moderate- high aggressive**
- **Moderate aggressive**
- **Low aggressive**
- **-** **No reaction**

7. Reference

Health Canada. 2025. Guidelines for Canadian Drinking Water Quality. Summary table. Drinking Water Guidelines. Prepared by the Federal-Provincial-Territorial Committee on Drinking Water of the Federal-Provincial-Territorial Committee on Health and the Environment. Available at http://www.hc-sc.gc.ca (most recent update of on-line version: March 2025).

Appendices

Appendix A

Metals in Drinking Water “Flush” Message from Fraser Health Authority

fraserhealth Better health. Best in health care.

January 25, 2025

Water System Operators

Re: Metals in Drinking Water – "Flush" Message in Annual Reports

Anytime the water in a particular faucet has not been used for six hours or longer, "flush" your cold-water pipes by running the water until you notice a change in temperature. *(This could take as little as five to thirty seconds if there has been recent heavy water use such as showering or toilet flushing. Otherwise, it could take two minutes or longer.)* The more time water has been sitting in your home's pipes, the more lead it may contain.

Use only water from the cold tap for drinking, cooking, and especially making baby formula. Hot water is likely to contain higher levels of lead.

The two actions recommended above are very important to the health of your family. They will probably be effective in reducing lead levels because most of the lead in household water usually comes from the plumbing in your house, not from the local water supply.

Conserving water is still important. Rather than just running the water down the drain you could use the water for things such as watering your plants.

If you have any questions, please contact our Drinking Water Program at 604-870-7903 or 1-866-749-7900.

Sincerely,

Alex Kwan
Acting Manager, Drinking Water Program
Fraser Health Authority
HPLand@fraserhealth.ca

Appendix B

Preventing Water-Borne Infections for People with Weakened Immune Systems (HealthLinkBC)

BRITISH COLUMBIA | HealthLinkBC

Number 56
January 2017

Preventing water-borne infections for people with weakened immune systems

Who is at higher risk from water-borne infections?

People with very weak immune systems who are at higher risk of certain water-borne diseases include those with:

- HIV infection who have a CD4+ count of less than 100 cells/mm^3;
- lymphoma or leukemia (hematological malignancies) who are being actively treated or have been in remission and off treatment for less than 1 year;
- hematopoietic stem cell transplant recipients; and
- people born with diseases that severely affect their immune systems.

Some people with weakened immune systems, such as those with certain types of cancers or taking certain medications, may not be at higher risk of severe water-borne diseases. These people do not need to take extra precautions with their drinking water.

Ask your doctor or nurse practioner how weak your immune system is, and whether you need to take extra precautions.

How can drinking water become contaminated?

Drinking water can contain different organisms, including bacteria, viruses and parasites, which can cause disease. These organisms can exist in the source water, such as lake water, and survive through treatment, or they can enter the water supply in the distribution system.

Well water can be contaminated if the well is located or constructed in a way that the groundwater it draws from is at risk of containing pathogens (germs) such as a shallow well or a well drilled in fractured rock.

Surface water, such as rivers, lakes and streams, can also contain disease-causing organisms from animal feces.

If you have a weak immune system, you should not drink water from surface sources or groundwater at risk of containing pathogens, unless the water has been treated to remove or inactivate at least 99.9 per cent of parasites (protozoa), 99.99 per cent of viruses and all harmful bacteria.

Most community water systems in B.C. have effective treatment, such as disinfection or chlorination, against bacteria and viruses. However, in many cases, treatment may not provide a 99.9 per cent reduction in infectious parasites. Some water systems and many private supplies have no treatment at all. If the water you drink has not been disinfected, please refer to HealthLinkBC File #49b Disinfecting drinking water.

How can I further treat disinfected water?

People with very weak immune systems should consult with their doctor or nurse practitioner and may need to take extra precautions with their drinking water.

Boiling: If your water supply has already been disinfected, bring the water to a full boil to inactivate any *Cryptosporidium* parasites - a major concern for people with weakened immune systems. For more information, see HealthLinkBC File #48 *Cryptosporidium* infection.

If the water has not already been disinfected, bring the water to a full boil for at least 1 minute. This will kill or inactivate bacteria, viruses and parasites. At elevations over 2,000

meters (6,500 feet), boil water for at least 2 minutes to disinfect it.

Do not drink or use tap water to brush your teeth, rinse your mouth, mix drinks or make ice cubes without boiling it first.

Please note that boiling water will get rid of viruses, bacteria and parasites but not chemicals which may be found in the water.

Reverse Osmosis (RO): RO is effective against all disease-causing organisms and many chemical contaminants. Unless it has a high capacity, it will only produce small amounts of water and waste a large volume. Speak to a water treatment specialist to see if this is the best option for you.

Ultraviolet (UV) Treatment: UV light will kill many disease-causing organisms, and is effective against almost all parasites. UV will not kill some bacterial spores and some viruses, so it should not be used unless the water supply is at least disinfected. UV treatment units should meet NSF Standard #55A.

Filters: Filters do not remove bacteria and viruses and should not be used unless the water supply is disinfected first.

If you plan to install a drinking water filter in your home, you will need a system labeled as Absolute 1 micron or smaller, and labeled as meeting ANSI/NSF International Standard #53 for removal of parasites.

Jug-type filters, such as a Brita®, which sit in a jug and allow water to trickle through, and some tap-mounted and built-in devices are not an appropriate solution. The jug filter models are not effective in removing many disease-causing organisms.

Can I drink bottled water?

Bottled water in B.C. may or may not have been treated. If you have a very weak immune system, check with the bottling company to find out what treatment, if any, it has had. Bottled water that has been properly treated using one of the methods listed above can be used for drinking, brushing teeth, making ice cubes and for recipes where water is used but not boiled, such as cold soups.

For more information

For more information, including the level of treatment in your local water system, contact your drinking water purveyor or supplier, or the local environmental health officer or drinking water officer. To find your health authority's drinking water contact visit www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/drinking-water-quality/health-authority-contacts.

For more information about water-borne infections and how to safely disinfect your drinking water, see the following HealthLinkBC Files:

- HealthLinkBC File #49a Water-borne infections in British Columbia
- HealthLinkBC File #49b Disinfecting drinking water
- HealthLinkBC File #69b Feeding your baby formula: Safely making and storing formula

Appendix C

Sample Range Report (Fraser Health Authority)

Sample Range Report

Fraser Health Authority

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

Operator Jason Hildebrandt
2889 Grandview Cres
Abbotsford, BC V2T 2R6

Sampling Site	Date Collected	Total Coliform	E. Coli	Fecal Coliform
31419 Springhill Court, 31419 Springhill Court				
	1-15-2024 11:07:00 AM	LT1	LT1	
	1-22-2024 8:29:00 AM	LT1	LT1	
	2-20-2024 11:12:00 AM	LT1	LT1	
	2-26-2024 1:10:00 PM	3.1	LT1	
	3-4-2024 8:56:00 AM	LT1	LT1	
	4-2-2024 9:04:00 AM	LT1	LT1	
	5-13-2024 8:54:00 AM	LT1	LT1	
	6-25-2024 10:50:00 AM	1	LT1	
	8-6-2024 8:51:00 AM	LT1	LT1	
	9-16-2024 10:20:00 AM	LT1	LT1	
	10-28-2024 11:00:00 AM	3.1	LT1	
	12-9-2024 8:47:00 AM	LT1	LT1	
	Total Positive:	**3**	**0**	**0**
2940 Clearbrook Rd.(Bible Col), 2940 Clearbrook Road				
	1-2-2024 8:40:00 AM	ESTCT 13	LT1	
	1-15-2024 12:50:00 PM	LT1 GTR200	LT1 GTR200	
	1-22-2024 11:40:00 AM	LT1	LT1	
	2-5-2024 8:25:00 AM	LT1	LT1	
	2-26-2024 10:38:00	LT1	LT1	

AM			
3-11-2024 8:25:00 AM	LT1	LT1	
4-9-2024 6:35:00 AM	LT1	LT1	
5-13-2024 9:15:00 AM	LT1	LT1	
6-17-2024 8:24:00 AM	LT1	LT1	
7-15-2024 8:40:00 AM	LT1	LT1	
8-19-2024 8:59:00 AM	LT1	LT1	
9-23-2024 9:16:00 AM	LT1	LT1	
10-21-2024 8:15:00 AM	2.0	LT1	
10-28-2024 11:50:00 AM	**1.0**	**LT1**	
11-25-2024 9:35:00 AM	LT1	LT1	
Total Positive:	**3**	**0**	**0**

3089 Claudia Court,
3089 Claudia Court

1-2-2024 8:30:00 AM	ESTCT 8	LT1	
1-15-2024 12:42:00 PM	LT1 GTR200	LT1 GTR200	
1-22-2024 10:57:00 AM	LT1 GTR200	LT1 GTR200	
1-29-2024 9:26:00 AM	LT1	LT1	
2-26-2024 9:54:00 AM	LT1	LT1	
3-4-2024 9:13:00 AM	LT1	LT1	
4-9-2024 6:28:00 AM	LT1 GTR200	LT1 GTR200	
4-15-2024 8:47:00 AM	LT1	LT1	
5-6-2024 9:39:00 AM	LT1 GTR200	LT1 GTR200	
6-10-2024 9:01:00 AM	LT1 GTR200	LT1 GTR200	
7-15-2024 8:34:00 AM	LT1	LT1	
8-12-2024 8:27:00 AM	LT1 GTR200	LT1 GTR200	
9-16-2024 10:47:00 AM	1	LT1	
10-21-2024 8:07:00 AM	LT1	LT1	
11-18-2024 9:54:00 AM	LT1	LT1	

	Total Positive:	**2**	**0**	**0**
2889 Upland Cres, 2889 Upland Cres				
	1-2-2024 8:24:00 AM	ESTCT 40	LT1	
	1-15-2024 11:46:00 AM	LT1 GTR200	LT1 GTR200	
	1-22-2024 7:55:00 AM	LT1	LT1	
	2-12-2024 9:36:00 AM	LT1	LT1	
	2-26-2024 12:55:00 PM	LT1	LT1	
	3-25-2024 7:35:00 AM	LT1	LT1	
	5-6-2024 8:31:00 AM	LT1	LT1	
	6-17-2024 8:07:00 AM	LT1	LT1	
	7-29-2024 7:58:00 AM	LT1	LT1	
	9-9-2024 7:50:00 AM	1	LT1	
	10-21-2024 8:00:00 AM	**6.4**	**LT1**	
	10-28-2024 10:48:00 AM	**2.0**	**LT1**	
	12-2-2024 10:54:00 AM	LT1	LT1	
	Total Positive:	**4**	**0**	**0**
2459 Centre Street (at United Rentals), 2459 Centre Street (at United Rentals)				
	1-2-2024 8:50:00 AM	ESTCT 21	LT1	
	1-15-2024 11:55:00 AM	LT1 GTR200	LT1 GTR200	
	1-22-2024 10:05:00 AM	LT1	LT1	
	2-12-2024 9:58:00 AM	LT1	LT1	
	2-26-2024 11:54:00 AM	LT1	LT1	
	3-4-2024 8:40:00 AM	LT1	LT1	
	4-9-2024 6:57:00 AM	LT1	LT1	
	5-13-2024 9:03:00 AM	LT1	LT1	
	6-10-2024 10:00:00 AM	LT1	LT1	

	7-15-2024 8:21:00 AM	LT1	LT1	
	8-19-2024 8:43:00 AM	LT1	LT1	
	9-16-2024 10:35:00 AM	LT1	LT1	
	10-21-2024 8:24:00 AM	2.0	LT1	
	10-28-2024 11:25:00 AM	**2.0**	**LT1**	
	11-25-2024 9:22:00 AM	LT1	LT1	
	Total Positive:	**3**	**0**	**0**
32171 South Fraser Way (Petro Canada), 32171 South Fraser Way (Petro Canada)				
	1-15-2024 1:15:00 PM	LT1	LT1	
	1-22-2024 9:17:00 AM	LT1	LT1	
	2-26-2024 1:46:00 PM	LT1	LT1	
	3-4-2024 9:04:00 AM	LT1	LT1	
	4-2-2024 8:16:00 AM	LT1	LT1	
	4-29-2024 9:08:00 AM	LT1	LT1	
	6-10-2024 9:21:00 AM	LT1	LT1	
	7-8-2024 9:00:00 AM	LT1	LT1	
	8-6-2024 9:15:00 AM	LT1	LT1	
	9-9-2024 8:13:00 AM	LT1	LT1	
	10-15-2024 9:17:00 AM	LT1	LT1	
	11-13-2024 11:31:00 AM	LT1	LT1	
	12-16-2024 8:26:00 AM	LT1	LT1	
	Total Positive:	**0**	**0**	**0**
2749 Braeside Street, 2749 Braeside Street				
	1-15-2024 11:25:00 AM	LT1 GTR200	LT1 GTR200	
	1-22-2024 8:51:00 AM	LT1	LT1	

	1-29-2024 9:12:00 AM	LT1	LT1	
	2-26-2024 1:26:00 PM	LT1	LT1	
	4-9-2024 7:04:00 AM	LT1 GTR200	LT1 GTR200	
	4-15-2024 8:16:00 AM	LT1	LT1	
	5-21-2024 9:50:00 AM	LT1	LT1	
	7-2-2024 7:46:00 AM	LT1	LT1	
	8-12-2024 8:09:00 AM	LT1	LT1	
	9-23-2024 8:38:00 AM	LT1	LT1	
	11-4-2024 7:53:00 AM	LT1	LT1	
	12-16-2024 8:01:00 AM	LT1	LT1	
	Total Positive:	**0**	**0**	**0**
Reservoir C (1985), 2889 Grandview Cres				
	1-2-2024 8:17:00 AM	ESTCT 90	LT1	
	1-15-2024 9:55:00 AM	LT1 GTR200	LT1 GTR200	
	1-22-2024 1:03:00 PM	LT1	LT1	
	1-29-2024 9:01:00 AM	LT1 GTR200	LT1 GTR200	
	2-7-2024 7:25:00 AM	LT1	LT1	
	2-20-2024 11:30:00 AM	LT1	LT1	
	2-26-2024 9:35:00 AM	LT1	LT1	
	4-29-2024 8:34:00 AM	LT1	LT1	
	7-2-2024 8:39:00 AM	LT1	LT1	
	9-3-2024 9:15:00 AM	1	LT1	
	10-28-2024 9:06:00 AM	**9.9**	**1.0**	
	Total Positive:	**3**	**1**	**0**
2903 Palm Crescent, 2903 Palm Crescent				
	1-15-2024 11:33:00 AM	LT1 GTR200	LT1 GTR200	
	1-22-2024 10:45:00	LT1	LT1	

AM			
2-20-2024 11:22:00 AM	LT1	LT1	
2-26-2024 9:45:00 AM	LT1	LT1	
3-25-2024 8:03:00 AM	LT1	LT1	
4-29-2024 8:53:00 AM	LT1	LT1	
5-27-2024 10:48:00 AM	LT1	LT1	
7-2-2024 7:36:00 AM	LT1	LT1	
8-6-2024 8:59:00 AM	LT1	LT1	
9-3-2024 9:23:00 AM	LT1	LT1	
10-7-2024 9:19:00 AM	LT1	LT1	
11-13-2024 11:07:00 AM	LT1	LT1	
12-9-2024 8:39:00 AM	LT1	LT1	
Total Positive:	**0**	**0**	**0**

2464 Sunnyside Place, 2464 Sunnyside Place

1-8-2024 8:49:00 AM	ESTCT 4 ESTHCD	LT1	
1-15-2024 11:00:00 AM	**ESTCT 1 ESTHCD**	**LT1**	
1-22-2024 8:18:00 AM	LT1 GTR200	LT1 GTR200	
2-26-2024 1:04:00 PM	LT1	LT1	
3-11-2024 7:59:00 AM	LT1	LT1	
4-23-2024 7:52:00 AM	2	LT1	
6-3-2024 8:20:00 AM	LT1	LT1	
7-15-2024 8:12:00 AM	LT1	LT1	
8-26-2024 7:31:00 AM	LT1	LT1	
10-7-2024 8:55:00 AM	1.0	LT1	
11-18-2024 9:38:00 AM	**LT1**	**LT1**	
Total Positive:	**4**	**0**	**0**

2664 Albert Way, 2664 Albert Way

1-15-2024 10:53:00 AM	LT1 GTR200	LT1 GTR200	
1-22-2024 8:08:00 AM	LT1	LT1	
2-26-2024 12:02:00 PM	2.0	LT1	
3-4-2024 8:45:00 AM	LT1	LT1	
4-15-2024 8:08:00 AM	LT1	LT1	
5-27-2024 11:00:00 AM	LT1	LT1	
7-8-2024 9:28:00 AM	LT1	LT1	
8-19-2024 8:27:00 AM	LT1	LT1	
10-1-2024 8:40:00 AM	LT1	LT1	
11-13-2024 11:20:00 AM	LT1	LT1	
Total Positive:	**1**	**0**	**0**

2577 Victoria Street, 2577 Victoria St

1-8-2024 8:59:00 AM	LT1	LT1	
1-15-2024 11:48:00 AM	LT1	LT1	
1-22-2024 9:03:00 AM	LT1	LT1	
2-12-2024 9:51:00 AM	LT1	LT1	
2-26-2024 1:30:00 PM	LT1	LT1	
3-18-2024 8:34:00 AM	LT1	LT1	
4-15-2024 8:23:00 AM	LT1	LT1	
5-21-2024 8:50:00 AM	LT1	LT1	
6-25-2024 10:39:00 AM	LT1	LT1	
7-22-2024 10:29:00 AM	1	LT1	
8-26-2024 7:34:00 AM	LT1	LT1	
10-1-2024 9:10:00 AM	LT1	LT1	
10-28-2024 11:33:00 AM	LT1	LT1	
12-2-2024 11:12:00 AM	LT1	LT1	
Total Positive:	**1**	**0**	**0**

31898 Royal Crescent, 31898 Royal Crescent				
	1-15-2024 12:35:00 PM	LT1	LT1	
	1-22-2024 11:07:00 AM	LT1	LT1	
	1-29-2024 9:20:00 AM	LT1	LT1	
	2-26-2024 1:52:00 PM	LT1	LT1	
	4-2-2024 8:35:00 AM	LT1	LT1	
	5-6-2024 8:47:00 AM	LT1	LT1	
	6-3-2024 9:00:00 AM	LT1	LT1	
	7-8-2024 9:37:00 AM	LT1	LT1	
	8-12-2024 8:18:00 AM	LT1	LT1	
	9-9-2024 7:58:00 AM	LT1	LT1	
	10-15-2024 8:58:00 AM	1	LT1	
	11-18-2024 9:48:00 AM	LT1	LT1	
	12-16-2024 8:09:00 AM	LT1	LT1	
	Total Positive:	**1**	**0**	**0**

32073 Mt Waddington Ave, 32073 Mt Waddington Ave				
	1-15-2024 12:21:00 PM	LT1 GTR200	LT1 GTR200	
	1-22-2024 12:15:00 PM	LT1	LT1	
	2-20-2024 11:00:00 AM	LT1	LT1	
	2-26-2024 1:59:00 PM	LT1	LT1	
	3-25-2024 8:35:00 AM	LT1	LT1	
	4-23-2024 8:21:00 AM	LT1	LT1	
	5-27-2024 11:20:00 AM	LT1	LT1	
	7-2-2024 7:57:00 AM	LT1	LT1	
	7-29-2024 8:54:00 AM	LT1	LT1	
	9-3-2024 9:45:00 AM	LT1	LT1	

	10-7-2024 9:28:00 AM	LT1	LT1	
	11-4-2024 9:27:00 AM	LT1	LT1	
	12-9-2024 9:13:00 AM	LT1	LT1	
	Total Positive:	**0**	**0**	**0**
2425 Lynden Street, 2425 Lynden Street				
	1-15-2024 10:50:00 AM	LT1	LT1	
	1-22-2024 9:50:00 AM	LT1	LT1	
	2-26-2024 11:08:00 AM	LT1	LT1	
	3-25-2024 8:43:00 AM	LT1	LT1	
	4-29-2024 9:16:00 AM	LT1	LT1	
	6-3-2024 8:31:00 AM	LT1	LT1	
	7-2-2024 8:08:00 AM	LT1	LT1	
	8-6-2024 9:23:00 AM	LT1	LT1	
	9-9-2024 8:23:00 AM	LT1	LT1	
	10-7-2024 9:40:00 AM	LT1	LT1	
	11-13-2024 11:39:00 AM	LT1	LT1	
	12-16-2024 8:36:00 AM	LT1	LT1	
	Total Positive:	**0**	**0**	**0**
32350 Diamond Cres, 32350 Diamond Cres				
	1-8-2024 9:22:00 AM	2	LT1	
	1-15-2024 1:04:00 PM	LT1 GTR200	LT1 GTR200	
	1-22-2024 12:03:00 PM	LT1	LT1	
	2-5-2024 8:32:00 AM	LT1	LT1	
	2-26-2024 10:52:00 AM	LT1	LT1	
	3-11-2024 8:30:00 AM	LT1	LT1	
	4-15-2024 8:56:00 AM	LT1	LT1	
	5-13-2024 9:22:00	LT1	LT1	

	AM			
	6-17-2024 8:58:00 AM	LT1	LT1	
	7-22-2024 10:52:00 AM	LT1	LT1	
	8-19-2024 9:29:00 AM	LT1	LT1	
	9-23-2024 9:23:00 AM	LT1	LT1	
	10-28-2024 11:57:00 AM	LT1	LT1	
	11-25-2024 9:45:00 AM	LT1	LT1	
	Total Positive:	**1**	**0**	**0**
2580 Langdon St - East end of driveway, 2580 Langdon St - East end of driveway				
	1-15-2024 12:04:00 PM	LT1	LT1	
	1-22-2024 9:32:00 AM	LT1	LT1	
	2-20-2024 10:50:00 AM	LT1	LT1	
	2-26-2024 11:41:00 AM	LT1	LT1	
	3-18-2024 8:52:00 AM	LT1	LT1	
	4-23-2024 8:09:00 AM	LT1	LT1	
	5-27-2024 10:00:00 AM	LT1	LT1	
	6-25-2024 11:02:00 AM	LT1	LT1	
	7-29-2024 8:22:00 AM	LT1	LT1	
	9-3-2024 9:53:00 AM	LT1	LT1	
	10-1-2024 9:31:00 AM	LT1	LT1	
	11-4-2024 9:35:00 AM	LT1	LT1	
	12-9-2024 9:02:00 AM	LT1	LT1	
	Total Positive:	**0**	**0**	**0**
2743 Moorland St, 2743 Moorland St				
	1-15-2024 11:16:00 AM	LT1 GTR200	LT1 GTR200	
	1-22-2024 8:38:00 AM	LT1 GTR200	LT1 GTR200	

2-5-2024 8:04:00 AM	LT1 GTR200	LT1 GTR200	
2-26-2024 11:17:00 AM	LT1	LT1	
3-18-2024 8:24:00 AM	LT1	LT1	
4-29-2024 8:45:00 AM	ESTCT 1 ESTHCD	LT1	
6-10-2024 8:50:00 AM	LT1 GTR200	LT1 GTR200	
7-22-2024 9:49:00 AM	LT1	LT1	
9-3-2024 9:32:00 AM	LT1	LT1	
10-15-2024 8:43:00 AM	LT1	LT1	
11-25-2024 9:04:00 AM	LT1	LT1	
Total Positive:	**1**	**0**	**0**

31894 Duchess Ave, 31894 Duchess Ave

1-15-2024 12:29:00 PM	LT1 GTR200	LT1 GTR200	
1-22-2024 11:22:00 AM	LT1	LT1	
2-12-2024 9:43:00 AM	LT1	LT1	
2-26-2024 10:01:00 AM	LT1	LT1	
3-18-2024 8:41:00 AM	LT1	LT1	
4-23-2024 8:00:00 AM	LT1	LT1	
5-21-2024 8:52:00 AM	LT1	LT1	
6-25-2024 10:30:00 AM	LT1	LT1	
7-29-2024 8:38:00 AM	LT1	LT1	
8-26-2024 7:47:00 AM	LT1	LT1	
10-1-2024 9:18:00 AM	1	LT1	
11-4-2024 9:17:00 AM	LT1	LT1	
12-2-2024 11:39:00 AM	LT1	LT1	
Total Positive:	**1**	**0**	**0**

32138 George Ferguson Way, 32138 George Ferguson Way

	1-15-2024 12:57:00 PM	LT1 GTR200	LT1 GTR200
	1-22-2024 11:50:00 AM	LT1	LT1
	1-29-2024 9:35:00 AM	LT1	LT1
	2-26-2024 10:45:00 AM	LT1	LT1
	4-2-2024 8:27:00 AM	LT1	LT1
	5-6-2024 9:01:00 AM	LT1	LT1
	6-3-2024 9:08:00 AM	LT1	LT1
	7-8-2024 9:44:00 AM	LT1	LT1
	8-12-2024 8:35:00 AM	LT1	LT1
	9-16-2024 10:54:00 AM	LT1	LT1
	10-15-2024 9:05:00 AM	LT1	LT1
	11-18-2024 10:38:00 AM	LT1	LT1
	Total Positive:	**0**	**0**	**0**
2548 Clearbrook Rd., 2548 Clearbrook Rd.			
	1-8-2024 9:09:00 AM	LT1	LT1
	1-15-2024 12:14:00 PM	LT1	LT1
	1-22-2024 12:23:00 PM	LT1 GTR200	LT1 GTR200
	2-5-2024 8:16:00 AM	LT1 GTR200	LT1 GTR200
	2-12-2024 10:06:00 AM	LT1	LT1
	2-26-2024 1:40:00 PM	LT1	LT1
	3-11-2024 8:15:00 AM	LT1	LT1
	4-15-2024 8:30:00 AM	LT1	LT1
	5-21-2024 9:19:00 AM	LT1	LT1
	6-17-2024 8:36:00 AM	LT1	LT1
	7-22-2024 10:42:00 AM	LT1	LT1
	8-26-2024 7:55:00 AM	LT1	LT1
	9-23-2024 8:50:00 AM	LT1	LT1

	10-28-2024 11:42:00 AM	1.0	LT1	
	12-2-2024 11:31:00 AM	LT1	LT1	
	Total Positive:	**1**	**0**	**0**
Reservoir B (2022), 2889 Grandview Cres				
	1-15-2024 9:55:00 AM	LT1 GTR200	LT1 GTR200	
	1-22-2024 1:02:00 PM	LT1 GTR200	LT1 GTR200	
	2-7-2024 9:21:00 AM	LT1	LT1	
	2-20-2024 11:31:00 AM	LT1	LT1	
	2-26-2024 9:36:00 AM	LT1	LT1	
	4-2-2024 8:55:00 AM	LT1	LT1	
	6-3-2024 8:09:00 AM	LT1	LT1	
	7-29-2024 8:47:00 AM	LT1	LT1	
	10-1-2024 8:32:00 AM	LT1	LT1	
	12-2-2024 10:45:00 AM	LT1	LT1	
	Total Positive:	**0**	**0**	**0**

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

Samples that contain total coliform:	29	10.36% of total
Samples that contain e. coli:	1	0.36% of total
Samples that contain fecal coliform:	0	0.00% of total
Number of consecutive samples that contain total coliform:	6	
Number of samples that contain total coliform in last 30 days:	0/4	
Total number of samples:	280	

Comments:

_____
Environmental Health Officer
Jul 9 2025

FOR FURTHER INFORMATION PLEASE CALL: Jeniene Lutz (604) 870-7900

Sample Range Report

Fraser Health Authority

Facility Name: RW 3-93
Date Range: Jan 1 2024 to Dec 31 2024

Operator

,

Sampling Site	Date Collected	Total Coliform	E. Coli	Fecal Coliform
RW 3-93, Lynden St				
	1-15-2024 11:12:00 AM	LT1	LT1	
	1-22-2024 12:49:00 PM	LT1	LT1	
	1-29-2024 9:52:00 AM	LT1	LT1	
	2-26-2024 11:31:00 AM	LT1	LT1	
	6-3-2024 8:45:00 AM	LT1	LT1	
	10-1-2024 9:46:00 AM	LT1	LT1	
	Total Positive:	**0**	**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:	6	

Comments:

_____
Environmental Health Officer
Jul 10 2025

FOR FURTHER INFORMATION PLEASE CALL: Jeniene Lutz (604) 870-7900

Sample Range Report

Fraser Health Authority

Facility Name: Well # 7-00
Date Range: Jan 1 2024 to Dec 31 2024

Operator

,

Sampling Site	Date Collected	Total Coliform	E. Coli	Fecal Coliform
Well RW 7 - 00/13, Lynden St				
	1-15-2024 11:24:00 AM	LT1	LT1	
	1-22-2024 12:34:00 PM	LT1	LT1	
	2-26-2024 11:25:00 AM	LT1	LT1	
	4-2-2024 7:58:00 AM	LT1	LT1	
	7-29-2024 8:08:00 AM	LT1	LT1	
	12-2-2024 11:18:00 AM	LT1	LT1	
	Total Positive:	**0**	**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:	6	

Comments:

_____
Environmental Health Officer
Jul 10 2025

FOR FURTHER INFORMATION PLEASE CALL: Jeniene Lutz (604) 870-7900

Sample Range Report

Fraser Health Authority

Facility Name: RW 1-87-14
Date Range: Jan 1 2024 to Dec 31 2024

Operator

,

Sampling Site	Date Collected	Total Coliform	E. Coli	Fecal Coliform
RW 1-87-14, Autumn Ave				
	1-2-2024 9:07:00 AM	1	LT1	
	1-15-2024 11:45:00 AM	LT1 GTR200	LT1 GTR200	
	2-12-2024 8:51:00 AM	LT1	LT1	
	2-12-2024 9:21:00 AM	LT1	LT1	
	2-26-2024 11:31:00 AM	LT1	LT1	
	9-3-2024 11:16:00 AM	LT1	LT1	
	Total Positive:	**1**	**0**	**0**

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

Samples that contain total coliform:	1	16.67% 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:	6	

Comments:

_____
Environmental Health Officer
Jul 10 2025

FOR FURTHER INFORMATION PLEASE CALL: Jeniene Lutz (604) 870-7900

Sample Range Report

Fraser Health Authority

Facility Name: Well # 2-63
Date Range: Jan 1 2024 to Dec 31 2024

Operator

,

Sampling Site	Date Collected	Total Coliform	E. Coli	Fecal Coliform
Well RW 2 - 63 , Autumn Ave				
	2-12-2024 8:05:00 AM	LT1	LT1	
	2-12-2024 8:35:00 AM	LT1	LT1	
	2-26-2024 11:18:00 AM	LT1	LT1	
	4-29-2024 9:31:00 AM	LT1	LT1	
	7-2-2024 8:24:00 AM	LT1 GTR200	LT1 GTR200	
	7-8-2024 9:05:00 AM	LT1 GTR200	LT1 GTR200	
	7-16-2024 8:27:00 AM	LT1	LT1	
	7-16-2024 8:57:00 AM	LT1	LT1	
	10-28-2024 9:58:00 AM	LT1	LT1	
	Total Positive:	**0**	**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:	9	

Comments:

_____
Environmental Health Officer
Jul 10 2025

FOR FURTHER INFORMATION PLEASE CALL: Jeniene Lutz (604) 870-7900

Appendix D

Water Quality Reports – Routine Water Quality Analysis (Element)

July 2024

Element
#104, 19575-55 A Ave.
Surrey, British Columbia
V3S 8P8, Canada

T: +1 (604) 514-3322
E: info.vancouver@element.com
W: www.element.com

Report Transmission Cover Page

Bill To: Clearbrook Waterworks District
2889 Grandview Crescent
Abbotsford, BC, Canada
V2T 2R6
Attn: Accounts Payable
Sampled By:
Company:

Project ID:
Project Name:
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1748096**
Control Number:
Date Received: Jul 24, 2024
Date Reported: Jul 30, 2024
Report Number: 3028802
Report Type: Final Report

Contact	Company	Address
Accounts Payable	**Clearbrook Waterworks District**	2889 Grandview Crescent Abbotsford, BC V2T 2R6 Phone: (604) 850-6621 Fax: (604) 850-7862 Email: office@clearbrookwaterworks.com

Delivery	Format	Deliverables
Email - Merge	PDF	COC / Invoice

Contact	Company	Address
Ineke Kalwij	**Kalwij Water Dynamics Inc**	P.O. Box 684 Station Main Port Coquitlam, BC V3B 6H9 Phone: (604) 615-4932 Fax: (604) 475-4062 Email: ineke@kalwijwaterdynamics.com

Delivery	Format	Deliverables
Email - Merge	PDF	COA / COC
Email - Merge	PDF	COC / Test Report

Contact	Company	Address
Jason Hildebrandt	**Clearbrook Waterworks District**	2889 Grandview Crescent Abbotsford, BC V2T 2R6 Phone: (604) 309-3986 Fax: (604) 850-7862 Email: jason@clearbrookwaterworks.com

Delivery	Format	Deliverables
Email - Merge	PDF	COC / Test Report

Contact	Company	Address
Ryan Federau	**Clearbrook Waterworks District**	2889 Grandview Crescent Abbotsford, BC V2T 2R6 Phone: (604) 309-3986 Fax: (604) 850-7862 Email: ryan@clearbrookwaterworks.com

Delivery	Format	Deliverables
Email - Merge	PDF	COA / COC
Email - Merge	PDF	COC / Test Report

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Surrey, British Columbia
V3S 8P8, Canada

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Analytical Report

Bill To: Clearbrook Waterworks District
2889 Grandview Crescent
Abbotsford, BC, Canada
V2T 2R6
Attn: Accounts Payable
Sampled By:
Company:

Project ID:
Project Name:
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1748096**
Control Number:
Date Received: Jul 24, 2024
Date Reported: Jul 30, 2024
Report Number: 3028802
Report Type: Final Report

Reference Number	1748096-1
Sample Date	July 24, 2024
Sample Time	11:36
Sample Location	
Sample Description	24645 Sunnyside Pl. / 7.1 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Metals Extractable						
Aluminum	Extractable	mg/L	0.001	0.001	0.1 OG; 2.9 MAC	Below OG
Antimony	Extractable	mg/L	0.00007	0.00002	0.006	Below MAC
Arsenic	Extractable	mg/L	0.0008	0.0001	0.010	Below MAC
Barium	Extractable	mg/L	0.014	0.0001	2.0	Below MAC
Boron	Extractable	mg/L	0.018	0.002	5	Below MAC
Cadmium	Extractable	mg/L	0.00001	0.00001	0.007	Below MAC
Chromium	Extractable	mg/L	0.00013	0.00005	0.05	Below MAC
Copper	Extractable	mg/L	0.0043	0.0005	1 AO; 2 MAC	Below AO
Lead	Extractable	mg/L	0.00071	0.00001	0.005	Below MAC
Selenium	Extractable	mg/L	0.0003	0.0002	0.05	Below MAC
Strontium	Extractable	mg/L	0.14	0.0001	7.0	Below MAC
Uranium	Extractable	mg/L	0.00013	0.00001	0.02	Below MAC
Vanadium	Extractable	mg/L	0.00058	0.00005		
Zinc	Extractable	mg/L	0.018	0.0005	5.0	Below AO
Microbiological Analysis						
Total Coliforms	Enzyme Substrate Test	MPN/100 mL	1.0	1.0	0 per 100 mL	Above MAC
Escherichia coli	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Heterotrophic Count - Aerobic	SimPlate	MPN/mL	2.0	2		
Physical and Aggregate Properties						
Colour	True	Colour units	<5	5		
Turbidity		NTU	0.11	0.1	0.1/0.3/1.0 OG	
Routine Water						
pH			7.54	0.01	7.0-10.5	Within Range
pH - Holding Time			Exceeded			
Temp. of observed pH		°C	24.5			
Electrical Conductivity	at 25 °C	µS/cm	322	1		
Calcium	Extractable	mg/L	34	0.01		
Iron	Extractable	mg/L	0.010	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	8.0	0.02		
Manganese	Extractable	mg/L	0.002	0.001	0.02 AO; 0.12 MAC	Below AO
Potassium	Extractable	mg/L	2.1	0.04		
Silicon	Extractable	mg/L	9.4	0.005		
Sodium	Extractable	mg/L	13	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	70	5		
Chloride	Dissolved	mg/L	37.8	0.05	250	Below AO
Fluoride	Dissolved	mg/L	<0.01	0.01	1.5	Below MAC

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W: www.element.com

Analytical Report

Bill To: Clearbrook Waterworks District
2889 Grandview Crescent
Abbotsford, BC, Canada
V2T 2R6
Attn: Accounts Payable
Sampled By:
Company:

Project ID:
Project Name:
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1748096**
Control Number:
Date Received: Jul 24, 2024
Date Reported: Jul 30, 2024
Report Number: 3028802
Report Type: Final Report

Reference Number	1748096-1
Sample Date	July 24, 2024
Sample Time	11:36
Sample Location	
Sample Description	24645 Sunnyside Pl. / 7.1 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water - Continued						
Nitrate - N	Dissolved	mg/L	1.57	0.01	10	Below MAC
Nitrite - N	Dissolved	mg/L	<0.01	0.01	1	Below MAC
Sulfate (SO4)	Dissolved	mg/L	21.1	0.1	500	Below AO
Hardness	as CaCO3 (extractable)	mg/L	118	1		
Total Dissolved Solids	Extractable	mg/L	191	1	500	Below AO

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Analytical Report

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2889 Grandview Crescent
Abbotsford, BC, Canada
V2T 2R6
Attn: Accounts Payable
Sampled By:
Company:

Project ID:
Project Name:
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1748096**
Control Number:
Date Received: Jul 24, 2024
Date Reported: Jul 30, 2024
Report Number: 3028802
Report Type: Final Report

Reference Number	1748096-2
Sample Date	July 24, 2024
Sample Time	11:49
Sample Location	
Sample Description	32350 Diamond Cres. / 7.1 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Metals Extractable						
Aluminum	Extractable	mg/L	0.001	0.001	0.1 OG; 2.9 MAC	Below OG
Antimony	Extractable	mg/L	0.00011	0.00002	0.006	Below MAC
Arsenic	Extractable	mg/L	0.0012	0.0001	0.010	Below MAC
Barium	Extractable	mg/L	0.018	0.0001	2.0	Below MAC
Boron	Extractable	mg/L	0.027	0.002	5	Below MAC
Cadmium	Extractable	mg/L	0.00001	0.00001	0.007	Below MAC
Chromium	Extractable	mg/L	<0.00005	0.00005	0.05	Below MAC
Copper	Extractable	mg/L	0.0051	0.0005	1 AO; 2 MAC	Below AO
Lead	Extractable	mg/L	0.00078	0.00001	0.005	Below MAC
Selenium	Extractable	mg/L	0.0005	0.0002	0.05	Below MAC
Strontium	Extractable	mg/L	0.11	0.0001	7.0	Below MAC
Uranium	Extractable	mg/L	0.00022	0.00001	0.02	Below MAC
Vanadium	Extractable	mg/L	0.00059	0.00005		
Zinc	Extractable	mg/L	0.011	0.0005	5.0	Below AO
Microbiological Analysis						
Total Coliforms	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Escherichia coli	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Heterotrophic Count - Aerobic	SimPlate	MPN/mL	2.0	2		
Physical and Aggregate Properties						
Colour	True	Colour units	<5	5		
Turbidity		NTU	<0.10	0.1	0.1/0.3/1.0 OG	
Routine Water						
pH			7.65	0.01	7.0-10.5	Within Range
pH - Holding Time			Exceeded			
Temp. of observed pH		°C	24.7			
Electrical Conductivity	at 25 °C	µS/cm	313	1		
Calcium	Extractable	mg/L	33	0.01		
Iron	Extractable	mg/L	0.006	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	8.0	0.02		
Manganese	Extractable	mg/L	0.016	0.001	0.02 AO; 0.12 MAC	Below AO
Potassium	Extractable	mg/L	2.6	0.04		
Silicon	Extractable	mg/L	8.5	0.005		
Sodium	Extractable	mg/L	15	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	95	5		
Chloride	Dissolved	mg/L	22.3	0.05	250	Below AO
Fluoride	Dissolved	mg/L	0.02	0.01	1.5	Below MAC

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V2T 2R6
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Sampled By:
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Project ID:
Project Name:
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1748096**
Control Number:
Date Received: Jul 24, 2024
Date Reported: Jul 30, 2024
Report Number: 3028802
Report Type: Final Report

Reference Number	1748096-2
Sample Date	July 24, 2024
Sample Time	11:49
Sample Location	
Sample Description	32350 Diamond Cres. / 7.1 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water - Continued						
Nitrate - N	Dissolved	mg/L	0.78	0.01	10	Below MAC
Nitrite - N	Dissolved	mg/L	<0.01	0.01	1	Below MAC
Sulfate (SO4)	Dissolved	mg/L	24.1	0.1	500	Below AO
Hardness	as CaCO3 (extractable)	mg/L	115	1		
Total Dissolved Solids	Extractable	mg/L	188	1	500	Below AO

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Lot ID: **1748096**
Control Number:
Date Received: Jul 24, 2024
Date Reported: Jul 30, 2024
Report Number: 3028802
Report Type: Final Report

Reference Number	1748096-3
Sample Date	July 24, 2024
Sample Time	11:10
Sample Location	
Sample Description	Reservoir B / 7.1 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Metals Extractable						
Aluminum	Extractable	mg/L	0.002	0.001	0.1 OG; 2.9 MAC	Below OG
Antimony	Extractable	mg/L	0.00007	0.00002	0.006	Below MAC
Arsenic	Extractable	mg/L	0.0007	0.0001	0.010	Below MAC
Barium	Extractable	mg/L	0.014	0.0001	2.0	Below MAC
Boron	Extractable	mg/L	0.020	0.002	5	Below MAC
Cadmium	Extractable	mg/L	0.00001	0.00001	0.007	Below MAC
Chromium	Extractable	mg/L	0.00011	0.00005	0.05	Below MAC
Copper	Extractable	mg/L	<0.0005	0.0005	1 AO; 2 MAC	Below AO
Lead	Extractable	mg/L	<0.00001	0.00001	0.005	Below MAC
Selenium	Extractable	mg/L	0.0003	0.0002	0.05	Below MAC
Strontium	Extractable	mg/L	0.14	0.0001	7.0	Below MAC
Uranium	Extractable	mg/L	0.00011	0.00001	0.02	Below MAC
Vanadium	Extractable	mg/L	0.00052	0.00005		
Zinc	Extractable	mg/L	0.0009	0.0005	5.0	Below AO
Microbiological Analysis						
Total Coliforms	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Escherichia coli	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Heterotrophic Count - Aerobic	SimPlate	MPN/mL	<2.0	2		
Physical and Aggregate Properties						
Colour	True	Colour units	<5	5		
Turbidity		NTU	0.13	0.1	0.1/0.3/1.0 OG	
Routine Water						
pH			7.54	0.01	7.0-10.5	Within Range
pH - Holding Time			Exceeded			
Temp. of observed pH		°C	24.5			
Electrical Conductivity	at 25 °C	µS/cm	324	1		
Calcium	Extractable	mg/L	34	0.01		
Iron	Extractable	mg/L	0.008	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	8.2	0.02		
Manganese	Extractable	mg/L	0.004	0.001	0.02 AO; 0.12 MAC	Below AO
Potassium	Extractable	mg/L	2.2	0.04		
Silicon	Extractable	mg/L	9.6	0.005		
Sodium	Extractable	mg/L	13	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	69	5		
Chloride	Dissolved	mg/L	38.5	0.05	250	Below AO
Fluoride	Dissolved	mg/L	<0.01	0.01	1.5	Below MAC

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Analytical Report

Bill To: Clearbrook Waterworks District
2889 Grandview Crescent
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V2T 2R6
Attn: Accounts Payable
Sampled By:
Company:

Project ID:
Project Name:
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1748096**
Control Number:
Date Received: Jul 24, 2024
Date Reported: Jul 30, 2024
Report Number: 3028802
Report Type: Final Report

Reference Number	1748096-3
Sample Date	July 24, 2024
Sample Time	11:10
Sample Location	
Sample Description	Reservoir B / 7.1 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water - Continued						
Nitrate - N	Dissolved	mg/L	1.60	0.01	10	Below MAC
Nitrite - N	Dissolved	mg/L	<0.01	0.01	1	Below MAC
Sulfate (SO4)	Dissolved	mg/L	20.9	0.1	500	Below AO
Hardness	as CaCO3 (extractable)	mg/L	119	1		
Total Dissolved Solids	Extractable	mg/L	192	1	500	Below AO

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Abbotsford, BC, Canada
V2T 2R6
Attn: Accounts Payable
Sampled By:
Company:

Project ID:
Project Name:
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1748096**
Control Number:
Date Received: Jul 24, 2024
Date Reported: Jul 30, 2024
Report Number: 3028802
Report Type: Final Report

Reference Number	1748096-4
Sample Date	July 24, 2024
Sample Time	14:26
Sample Location	
Sample Description	RW 1-87/14 / 7.1 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Metals Extractable						
Aluminum	Extractable	mg/L	<0.001	0.001	0.1 OG; 2.9 MAC	Below OG
Antimony	Extractable	mg/L	0.00012	0.00002	0.006	Below MAC
Arsenic	Extractable	mg/L	0.0015	0.0001	0.010	Below MAC
Barium	Extractable	mg/L	0.025	0.0001	2.0	Below MAC
Boron	Extractable	mg/L	0.028	0.002	5	Below MAC
Cadmium	Extractable	mg/L	0.00002	0.00001	0.007	Below MAC
Chromium	Extractable	mg/L	<0.00005	0.00005	0.05	Below MAC
Copper	Extractable	mg/L	<0.0005	0.0005	1 AO; 2 MAC	Below AO
Lead	Extractable	mg/L	<0.00001	0.00001	0.005	Below MAC
Selenium	Extractable	mg/L	0.0004	0.0002	0.05	Below MAC
Strontium	Extractable	mg/L	0.11	0.0001	7.0	Below MAC
Uranium	Extractable	mg/L	0.00020	0.00001	0.02	Below MAC
Vanadium	Extractable	mg/L	0.00052	0.00005		
Zinc	Extractable	mg/L	0.0013	0.0005	5.0	Below AO
Microbiological Analysis						
Total Coliforms	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Escherichia coli	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Heterotrophic Count - Aerobic	SimPlate	MPN/mL	<2.0	2		
Physical and Aggregate Properties						
Colour	True	Colour units	<5	5		
Turbidity		NTU	0.16	0.1	0.1/0.3/1.0 OG	
Routine Water						
pH			7.64	0.01	7.0-10.5	Within Range
pH - Holding Time			Exceeded			
Temp. of observed pH		°C	24.7			
Electrical Conductivity	at 25 °C	µS/cm	316	1		
Calcium	Extractable	mg/L	33	0.01		
Iron	Extractable	mg/L	0.010	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	8.5	0.02		
Manganese	Extractable	mg/L	0.068	0.001	0.02 AO; 0.12 MAC	Above AO
Potassium	Extractable	mg/L	2.9	0.04		
Silicon	Extractable	mg/L	8.6	0.005		
Sodium	Extractable	mg/L	16	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	96	5		
Chloride	Dissolved	mg/L	22.0	0.05	250	Below AO
Fluoride	Dissolved	mg/L	0.02	0.01	1.5	Below MAC

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Analytical Report

Bill To: Clearbrook Waterworks District
2889 Grandview Crescent
Abbotsford, BC, Canada
V2T 2R6
Attn: Accounts Payable
Sampled By:
Company:

Project ID:
Project Name:
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1748096**
Control Number:
Date Received: Jul 24, 2024
Date Reported: Jul 30, 2024
Report Number: 3028802
Report Type: Final Report

Reference Number	1748096-4
Sample Date	July 24, 2024
Sample Time	14:26
Sample Location	
Sample Description	RW 1-87/14 / 7.1 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water - Continued						
Nitrate - N	Dissolved	mg/L	0.75	0.01	10	Below MAC
Nitrite - N	Dissolved	mg/L	<0.01	0.01	1	Below MAC
Sulfate (SO4)	Dissolved	mg/L	24.1	0.1	500	Below AO
Hardness	as CaCO3 (extractable)	mg/L	118	1		
Total Dissolved Solids	Extractable	mg/L	191	1	500	Below AO

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Abbotsford, BC, Canada
V2T 2R6
Attn: Accounts Payable
Sampled By:
Company:

Project ID:
Project Name:
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1748096**
Control Number:
Date Received: Jul 24, 2024
Date Reported: Jul 30, 2024
Report Number: 3028802
Report Type: Final Report

Reference Number	1748096-5
Sample Date	July 24, 2024
Sample Time	14:12
Sample Location	
Sample Description	RW 2-63/17 / 7.1 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Metals Extractable						
Aluminum	Extractable	mg/L	0.002	0.001	0.1 OG; 2.9 MAC	Below OG
Antimony	Extractable	mg/L	0.00008	0.00002	0.006	Below MAC
Arsenic	Extractable	mg/L	0.0007	0.0001	0.010	Below MAC
Barium	Extractable	mg/L	0.010	0.0001	2.0	Below MAC
Boron	Extractable	mg/L	0.016	0.002	5	Below MAC
Cadmium	Extractable	mg/L	0.00002	0.00001	0.007	Below MAC
Chromium	Extractable	mg/L	0.00010	0.00005	0.05	Below MAC
Copper	Extractable	mg/L	<0.0005	0.0005	1 AO; 2 MAC	Below AO
Lead	Extractable	mg/L	<0.00001	0.00001	0.005	Below MAC
Selenium	Extractable	mg/L	0.0007	0.0002	0.05	Below MAC
Strontium	Extractable	mg/L	0.090	0.0001	7.0	Below MAC
Uranium	Extractable	mg/L	0.00006	0.00001	0.02	Below MAC
Vanadium	Extractable	mg/L	0.00046	0.00005		
Zinc	Extractable	mg/L	0.0014	0.0005	5.0	Below AO
Microbiological Analysis						
Total Coliforms	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Escherichia coli	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Heterotrophic Count - Aerobic	SimPlate	MPN/mL	<2.0	2		
Physical and Aggregate Properties						
Colour	True	Colour units	<5	5		
Turbidity		NTU	0.25	0.1	0.1/0.3/1.0 OG	
Routine Water						
pH			7.46	0.01	7.0-10.5	Within Range
pH - Holding Time			Exceeded			
Temp. of observed pH		°C	24.4			
Electrical Conductivity	at 25 °C	µS/cm	230	1		
Calcium	Extractable	mg/L	24	0.01		
Iron	Extractable	mg/L	0.037	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	6.7	0.02		
Manganese	Extractable	mg/L	0.006	0.001	0.02 AO; 0.12 MAC	Below AO
Potassium	Extractable	mg/L	1.7	0.04		
Silicon	Extractable	mg/L	9.3	0.005		
Sodium	Extractable	mg/L	8.3	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	61	5		
Chloride	Dissolved	mg/L	15.9	0.05	250	Below AO
Fluoride	Dissolved	mg/L	0.01	0.01	1.5	Below MAC

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Analytical Report

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Sampled By:
Company:

Project ID:
Project Name:
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1748096**
Control Number:
Date Received: Jul 24, 2024
Date Reported: Jul 30, 2024
Report Number: 3028802
Report Type: Final Report

Reference Number	1748096-5
Sample Date	July 24, 2024
Sample Time	14:12
Sample Location	
Sample Description	RW 2-63/17 / 7.1 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water - Continued						
Nitrate - N	Dissolved	mg/L	1.47	0.01	10	Below MAC
Nitrite - N	Dissolved	mg/L	<0.01	0.01	1	Below MAC
Sulfate (SO4)	Dissolved	mg/L	21.2	0.1	500	Below AO
Hardness	as CaCO3 (extractable)	mg/L	88	1		
Total Dissolved Solids	Extractable	mg/L	147	1	500	Below AO

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Project Location:
LSD:
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Proj. Acct. code:

Lot ID: **1748096**
Control Number:
Date Received: Jul 24, 2024
Date Reported: Jul 30, 2024
Report Number: 3028802
Report Type: Final Report

Reference Number	1748096-6
Sample Date	July 24, 2024
Sample Time	14:02
Sample Location	
Sample Description	RW 3-93/11 / 7.1 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Metals Extractable						
Aluminum	Extractable	mg/L	<0.001	0.001	0.1 OG; 2.9 MAC	Below OG
Antimony	Extractable	mg/L	0.00004	0.00002	0.006	Below MAC
Arsenic	Extractable	mg/L	0.0004	0.0001	0.010	Below MAC
Barium	Extractable	mg/L	0.0074	0.0001	2.0	Below MAC
Boron	Extractable	mg/L	0.011	0.002	5	Below MAC
Cadmium	Extractable	mg/L	0.00003	0.00001	0.007	Below MAC
Chromium	Extractable	mg/L	0.00015	0.00005	0.05	Below MAC
Copper	Extractable	mg/L	0.0009	0.0005	1 AO; 2 MAC	Below AO
Lead	Extractable	mg/L	0.00006	0.00001	0.005	Below MAC
Selenium	Extractable	mg/L	0.0003	0.0002	0.05	Below MAC
Strontium	Extractable	mg/L	0.13	0.0001	7.0	Below MAC
Uranium	Extractable	mg/L	0.00004	0.00001	0.02	Below MAC
Vanadium	Extractable	mg/L	0.00057	0.00005		
Zinc	Extractable	mg/L	0.0065	0.0005	5.0	Below AO
Microbiological Analysis						
Total Coliforms	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Escherichia coli	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Heterotrophic Count - Aerobic	SimPlate	MPN/mL	2.0	2		
Physical and Aggregate Properties						
Colour	True	Colour units	<5	5		
Turbidity		NTU	<0.10	0.1	0.1/0.3/1.0 OG	
Routine Water						
pH			7.27	0.01	7.0-10.5	Within Range
pH - Holding Time			Exceeded			
Temp. of observed pH		°C	24.6			
Electrical Conductivity	at 25 °C	µS/cm	301	1		
Calcium	Extractable	mg/L	30	0.01		
Iron	Extractable	mg/L	<0.004	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	7.1	0.02		
Manganese	Extractable	mg/L	<0.001	0.001	0.02 AO; 0.12 MAC	Below AO
Potassium	Extractable	mg/L	1.7	0.04		
Silicon	Extractable	mg/L	10	0.005		
Sodium	Extractable	mg/L	12	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	47	5		
Chloride	Dissolved	mg/L	43.8	0.05	250	Below AO
Fluoride	Dissolved	mg/L	<0.01	0.01	1.5	Below MAC

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Analytical Report

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Attn: Accounts Payable
Sampled By:
Company:

Project ID:
Project Name:
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1748096**
Control Number:
Date Received: Jul 24, 2024
Date Reported: Jul 30, 2024
Report Number: 3028802
Report Type: Final Report

Reference Number	1748096-6
Sample Date	July 24, 2024
Sample Time	14:02
Sample Location	
Sample Description	RW 3-93/11 / 7.1 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water - Continued						
Nitrate - N	Dissolved	mg/L	2.53	0.01	10	Below MAC
Nitrite - N	Dissolved	mg/L	<0.01	0.01	1	Below MAC
Sulfate (SO4)	Dissolved	mg/L	16.2	0.1	500	Below AO
Hardness	as CaCO3 (extractable)	mg/L	103	1		
Total Dissolved Solids	Extractable	mg/L	177	1	500	Below AO

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Proj. Acct. code:

Lot ID: **1748096**
Control Number:
Date Received: Jul 24, 2024
Date Reported: Jul 30, 2024
Report Number: 3028802
Report Type: Final Report

Reference Number	1748096-7
Sample Date	July 24, 2024
Sample Time	13:48
Sample Location	
Sample Description	RW 7-00/13 / 7.1 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Metals Extractable						
Aluminum	Extractable	mg/L	<0.001	0.001	0.1 OG; 2.9 MAC	Below OG
Antimony	Extractable	mg/L	0.00004	0.00002	0.006	Below MAC
Arsenic	Extractable	mg/L	0.0003	0.0001	0.010	Below MAC
Barium	Extractable	mg/L	0.0068	0.0001	2.0	Below MAC
Boron	Extractable	mg/L	0.011	0.002	5	Below MAC
Cadmium	Extractable	mg/L	0.00003	0.00001	0.007	Below MAC
Chromium	Extractable	mg/L	0.00019	0.00005	0.05	Below MAC
Copper	Extractable	mg/L	0.0019	0.0005	1 AO; 2 MAC	Below AO
Lead	Extractable	mg/L	0.00024	0.00001	0.005	Below MAC
Selenium	Extractable	mg/L	<0.0002	0.0002	0.05	Below MAC
Strontium	Extractable	mg/L	0.12	0.0001	7.0	Below MAC
Uranium	Extractable	mg/L	0.00002	0.00001	0.02	Below MAC
Vanadium	Extractable	mg/L	0.00054	0.00005		
Zinc	Extractable	mg/L	0.020	0.0005	5.0	Below AO
Microbiological Analysis						
Total Coliforms	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Escherichia coli	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Heterotrophic Count - Aerobic	SimPlate	MPN/mL	<2.0	2		
Physical and Aggregate Properties						
Colour	True	Colour units	<5	5		
Turbidity		NTU	<0.10	0.1	0.1/0.3/1.0 OG	
Routine Water						
pH			7.22	0.01	7.0-10.5	Within Range
pH - Holding Time			Exceeded			
Temp. of observed pH		°C	24.7			
Electrical Conductivity	at 25 °C	µS/cm	266	1		
Calcium	Extractable	mg/L	26	0.01		
Iron	Extractable	mg/L	<0.004	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	6.3	0.02		
Manganese	Extractable	mg/L	<0.001	0.001	0.02 AO; 0.12 MAC	Below AO
Potassium	Extractable	mg/L	1.4	0.04		
Silicon	Extractable	mg/L	10	0.005		
Sodium	Extractable	mg/L	8.9	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	40	5		
Chloride	Dissolved	mg/L	38.3	0.05	250	Below AO
Fluoride	Dissolved	mg/L	<0.01	0.01	1.5	Below MAC

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Analytical Report

Bill To: Clearbrook Waterworks District
2889 Grandview Crescent
Abbotsford, BC, Canada
V2T 2R6
Attn: Accounts Payable
Sampled By:
Company:

Project ID:
Project Name:
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1748096**
Control Number:
Date Received: Jul 24, 2024
Date Reported: Jul 30, 2024
Report Number: 3028802
Report Type: Final Report

Reference Number	1748096-7
Sample Date	July 24, 2024
Sample Time	13:48
Sample Location	
Sample Description	RW 7-00/13 / 7.1 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water - Continued						
Nitrate - N	Dissolved	mg/L	2.52	0.01	10	Below MAC
Nitrite - N	Dissolved	mg/L	<0.01	0.01	1	Below MAC
Sulfate (SO4)	Dissolved	mg/L	14.9	0.1	500	Below AO
Hardness	as CaCO3 (extractable)	mg/L	90	1		
Total Dissolved Solids	Extractable	mg/L	158	1	500	Below AO

Approved by:

Max Hewitt
Operations Manager

Data have been validated by Analytical Quality Control and Element's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

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Methodology and Notes

Bill To: Clearbrook Waterworks District
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V2T 2R6
Attn: Accounts Payable
Sampled By:
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Project Name:
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LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1748096**
Control Number:
Date Received: Jul 24, 2024
Date Reported: Jul 30, 2024
Report Number: 3028802
Report Type: Final Report

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Alk, pH, EC, Turb in water (BC)	APHA	*	Alkalinity - Titration Method, 2320 B	Jul 25, 2024	Element Vancouver
Alk, pH, EC, Turb in water (BC)	APHA	*	Conductivity, 2510 B	Jul 25, 2024	Element Vancouver
Alk, pH, EC, Turb in water (BC)	APHA	*	pH - Electrometric Method, 4500-H+ B	Jul 25, 2024	Element Vancouver
Anions by IEC in water (VAN)	APHA	*	Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	Jul 25, 2024	Element Vancouver
Heterotrophic (Standard) Plate Count (Aerobic SP) - VAN	APHA		Enzyme Substrate Method, 9215 E	Jul 24, 2024	Element Vancouver
Metals SemiTrace (Extractable) in water (VAN)	US EPA	*	Metals & Trace Elements by ICP-AES, 6010C	Jul 26, 2024	Element Vancouver
Total and E-Coli - Colilert - DW (VAN)	APHA		Enzyme Substrate Test, APHA 9223 B	Jul 24, 2024	Element Vancouver
Trace Metals (extractable) in Water (VAN)	US EPA	*	Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Jul 29, 2024	Element Vancouver
True Color in water (VAN)	APHA	*	Spectrophotometric - Single Wavelength Method, 2120 C	Jul 28, 2024	Element Vancouver
Turbidity - Water (VAN)	APHA	*	Turbidity - Nephelometric Method, 2130 B	Jul 25, 2024	Element Vancouver

** Reference Method Modified*

References

APHA	Standard Methods for the Examination of Water and Wastewater
US EPA	US Environmental Protection Agency Test Methods

Guidelines

Guideline Description	Health Canada GCDWQ
Guideline Source	Guidelines for Canadian Drinking Water Quality, Health Canada, Sept 2020
Guideline Comments	MAC = Maximum Acceptable Concentration AO = Aesthetic Objective OG = Operational Guideline for Water Treatment Plants (does not apply to private groundwater wells). Refer to Health Canada for complete guidelines at www.hc-sc.gc.ca

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Calgary	1-403-291-2022
Edmonton	1-780-438-5522
Fort St. John	1-250-785-2731
Vancouver	1-604-514-3322

ED-120A-10

Environmental Sample Information Sheet

Please complete the entire form to ensure correct testing and reporting.

Project Information

Agreement ID:
Project ID:
Project Name:
Project Location:
Legal Location:
PO/AFE#:
Proj. Acct. Code:
Quote #:

Invoice To

Company: Clearbrook Waterworks
Address:
Attention:
Phone:
Cell:
Email:
Copy of Report: Yes / No

Report To

Company:
Address:
Attention:
Phone:
Cell:
Email:
Copy of Invoice: Yes / No

Additional Report To:
1) Email:
2) Email:
3) Email:

Lab Use Only

Affix barcode here

Lot #:
Date Received: JUL 24 16:01
Delivery Method: Hand
Waybill: 7-16
Received By: JB
Temp Received: °C

RUSH Priority

- ☐ Emergency
- ☐ 100% Rush
- ☐ Spill Response
- ☐ 50% Rush

Date Required:

Report Results

- ☐ Email
- ☐ PDF
- ☐ Online
- ☐ Excel
- ☐ QA/QC

Requirements

- ☐ HCDWQGL
- ☐ SPIGEC
- ☐ AB Tier 1
- ☐ Other
- ☐ BCCSR

Sample Custody

Sampled By:
Company:

I authorize Element to proceed with the work indicated on this form:

Signature:
Date/Time:

For details on all RUSH priority samples, please contact your local customer support representative prior to submitting samples. When Emergency, Spill Response, or "ASAP" is requested, priority will default to 100% RUSH, with pricing and turn around time to match. If not all samples require RUSH, please indicate in the special instructions.

Submission of this form acknowledges acceptance of Element's Standard of terms and conditions (https://www.element.com/terms/terms-and-conditions)

Special Instructions

Please indicate any potentially hazardous samples.

	Site I.D.	Sample Description	Depth Range	Depth UoM	Sampled Date/Time (yyyy-mm-dd hh:mm)	Matrix	Sampling Method	# of Containers: Jars	# of Containers: Vials	# of Containers: Bags / Bottles	Enter tests above (X relevant samples below)
1		2464 Sunnyside Pl.			July 24/24 11:36Am				3		✓
2		32350 Diamond Cres.			" " 11:49Am				3		✓
3		Reservoir B			" " 11:10Am				3		✓
4		RW 1-87/14			" " 2:26Pm				3		✓
5		RW 2-63/17			" " 2:12Pm				3		✓
6		RW 3-93/11			" " 2:02Pm				3		✓
7		RW 7-00/13			" " 1:48Pm				3		✓
8											
9											
10											
11											
12											
13											
14											
15											

Lot: 1748096 COC
Clearbrook Waterworks District

December 2024

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Report Transmission Cover Page

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Company:

Project ID:
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Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1782171**
Control Number:
Date Received: Dec 6, 2024
Date Reported: Dec 11, 2024
Report Number: 3087296
Report Type: Final Report

Contact	Company	Address
Accounts Payable	**Clearbrook Waterworks District**	2889 Grandview Crescent Abbotsford, BC V2T 2R6 Phone: (604) 850-6621 Fax: (604) 850-7862 Email: office@clearbrookwaterworks.com

Delivery	Format	Deliverables
Email - Merge	PDF	COC / Invoice

Contact	Company	Address
Ineke Kalwij	**Kalwij Water Dynamics Inc**	P.O. Box 684 Station Main Port Coquitlam, BC V3B 6H9 Phone: (604) 615-4932 Fax: (604) 475-4062 Email: ineke@kalwijwaterdynamics.com

Delivery	Format	Deliverables
Email	PDF	COC / Test Report
Email	Standard Crosstab Without Tabs	Test Report
Email - Merge	PDF	COA
Email - Merge	PDF	COA / COC

Contact	Company	Address
Ryan Federau	**Clearbrook Waterworks District**	2889 Grandview Crescent Abbotsford, BC V2T 2R6 Phone: (604) 309-3986 Fax: (604) 850-7862 Email: ryan@clearbrookwaterworks.com

Delivery	Format	Deliverables
Email - Merge	PDF	COA / COC
Email - Merge	PDF	COC / Test Report

Notes To Clients:

- Reduction of analytical volume was necessary for chloride analysis to bring results within the analytical range for lot 1782171. Detection limits are adjusted accordingly.
- The analysis of water samples 1782171-1,2,3,4,5,6,7 are below Maximum Acceptable Concentrations for the chemical and bacteriological health related guidelines specified by the June 2024 Guidelines for Canadian Drinking Water Quality for the parameters tested.

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Analytical Report

Bill To: Clearbrook Waterworks District
2889 Grandview Crescent
Abbotsford, BC, Canada
V2T 2R6
Attn: Accounts Payable
Sampled By:
Company:

Project ID:
Project Name:
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1782171**
Control Number:
Date Received: Dec 6, 2024
Date Reported: Dec 11, 2024
Report Number: 3087296
Report Type: Final Report

Reference Number	1782171-1
Sample Date	December 06, 2024
Sample Time	09:48
Sample Location	
Sample Description	RW 1-87/14 / 9.8 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Metals Extractable						
Aluminum	Extractable	mg/L	<0.001	0.001	0.1 OG; 2.9 MAC	Below OG
Antimony	Extractable	mg/L	0.00008	0.00002	0.006	Below MAC
Arsenic	Extractable	mg/L	0.0019	0.0001	0.010	Below MAC
Barium	Extractable	mg/L	0.030	0.0001	2.0	Below MAC
Boron	Extractable	mg/L	0.042	0.002	5	Below MAC
Cadmium	Extractable	mg/L	0.00002	0.00001	0.007	Below MAC
Chromium	Extractable	mg/L	<0.00005	0.00005	0.05	Below MAC
Copper	Extractable	mg/L	<0.0005	0.0005	1 AO; 2 MAC	Below AO
Lead	Extractable	mg/L	<0.00001	0.00001	0.005	Below MAC
Selenium	Extractable	mg/L	<0.0002	0.0002	0.05	Below MAC
Strontium	Extractable	mg/L	0.13	0.0001	7.0	Below MAC
Uranium	Extractable	mg/L	0.00032	0.00001	0.02	Below MAC
Vanadium	Extractable	mg/L	0.00066	0.00005		
Zinc	Extractable	mg/L	0.0007	0.0005	5.0	Below AO
Microbiological Analysis						
Total Coliforms	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Escherichia coli	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Heterotrophic Count - Aerobic	SimPlate	MPN/mL	<2.0	2		
Physical and Aggregate Properties						
Colour	True	Colour units	<5	5		
Turbidity		NTU	0.32	0.1	0.1/0.3/1.0 OG	
Routine Water						
pH			7.66	0.01	7.0-10.5	Within Range
pH - Holding Time			Exceeded			
Temp. of observed pH		°C	24.2			
Electrical Conductivity	at 25 °C	µS/cm	395	1		
Calcium	Extractable	mg/L	37	0.01		
Iron	Extractable	mg/L	0.015	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	9.7	0.02		
Manganese	Extractable	mg/L	0.085	0.001	0.02 AO; 0.12 MAC	Above AO
Potassium	Extractable	mg/L	3.2	0.04		
Silicon	Extractable	mg/L	7.5	0.005		
Sodium	Extractable	mg/L	24	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	126	5		
Chloride	Dissolved	mg/L	32.9	0.05	250	Below AO
Fluoride	Dissolved	mg/L	0.03	0.01	1.5	Below MAC

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Reference Number	1782171-1
Sample Date	December 06, 2024
Sample Time	09:48
Sample Location	
Sample Description	RW 1-87/14 / 9.8 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water - Continued						
Nitrate - N	Dissolved	mg/L	<0.01	0.01	10	Below MAC
Nitrite - N	Dissolved	mg/L	<0.01	0.01	1	Below MAC
Sulfate (SO4)	Dissolved	mg/L	25.5	0.1	500	Below AO
Hardness	as CaCO3 (extractable)	mg/L	133	1		
Total Dissolved Solids	Extractable	mg/L	229	1	500	Below AO

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Lot ID: **1782171**
Control Number:
Date Received: Dec 6, 2024
Date Reported: Dec 11, 2024
Report Number: 3087296
Report Type: Final Report

Reference Number	1782171-2
Sample Date	December 06, 2024
Sample Time	10:04
Sample Location	
Sample Description	RW 2-63/17 / 9.8 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Metals Extractable						
Aluminum	Extractable	mg/L	0.001	0.001	0.1 OG; 2.9 MAC	Below OG
Antimony	Extractable	mg/L	0.00007	0.00002	0.006	Below MAC
Arsenic	Extractable	mg/L	0.0008	0.0001	0.010	Below MAC
Barium	Extractable	mg/L	0.014	0.0001	2.0	Below MAC
Boron	Extractable	mg/L	0.020	0.002	5	Below MAC
Cadmium	Extractable	mg/L	0.00002	0.00001	0.007	Below MAC
Chromium	Extractable	mg/L	0.00020	0.00005	0.05	Below MAC
Copper	Extractable	mg/L	<0.0005	0.0005	1 AO; 2 MAC	Below AO
Lead	Extractable	mg/L	<0.00001	0.00001	0.005	Below MAC
Selenium	Extractable	mg/L	0.0005	0.0002	0.05	Below MAC
Strontium	Extractable	mg/L	0.10	0.0001	7.0	Below MAC
Uranium	Extractable	mg/L	0.00011	0.00001	0.02	Below MAC
Vanadium	Extractable	mg/L	0.00045	0.00005		
Zinc	Extractable	mg/L	0.0010	0.0005	5.0	Below AO
Microbiological Analysis						
Total Coliforms	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Escherichia coli	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Heterotrophic Count - Aerobic	SimPlate	MPN/mL	<2.0	2		
Physical and Aggregate Properties						
Colour	True	Colour units	<5	5		
Turbidity		NTU	0.20	0.1	0.1/0.3/1.0 OG	
Routine Water						
pH			7.54	0.01	7.0-10.5	Within Range
pH - Holding Time			Exceeded			
Temp. of observed pH		°C	24.2			
Electrical Conductivity	at 25 °C	µS/cm	277	1		
Calcium	Extractable	mg/L	29	0.01		
Iron	Extractable	mg/L	0.007	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	7.4	0.02		
Manganese	Extractable	mg/L	0.007	0.001	0.02 AO; 0.12 MAC	Below AO
Potassium	Extractable	mg/L	1.9	0.04		
Silicon	Extractable	mg/L	8.8	0.005		
Sodium	Extractable	mg/L	10	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	76	5		
Chloride	Dissolved	mg/L	21.0	0.05	250	Below AO
Fluoride	Dissolved	mg/L	0.02	0.01	1.5	Below MAC

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Report Type: Final Report

Reference Number	1782171-2
Sample Date	December 06, 2024
Sample Time	10:04
Sample Location	
Sample Description	RW 2-63/17 / 9.8 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water - Continued						
Nitrate - N	Dissolved	mg/L	1.11	0.01	10	Below MAC
Nitrite - N	Dissolved	mg/L	<0.01	0.01	1	Below MAC
Sulfate (SO4)	Dissolved	mg/L	22.6	0.1	500	Below AO
Hardness	as CaCO3 (extractable)	mg/L	104	1		
Total Dissolved Solids	Extractable	mg/L	167	1	500	Below AO

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Lot ID: **1782171**
Control Number:
Date Received: Dec 6, 2024
Date Reported: Dec 11, 2024
Report Number: 3087296
Report Type: Final Report

Reference Number	1782171-3
Sample Date	December 06, 2024
Sample Time	09:18
Sample Location	
Sample Description	RW 3-93/4 / 9.8 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Metals Extractable						
Aluminum	Extractable	mg/L	0.002	0.001	0.1 OG; 2.9 MAC	Below OG
Antimony	Extractable	mg/L	0.00003	0.00002	0.006	Below MAC
Arsenic	Extractable	mg/L	0.0004	0.0001	0.010	Below MAC
Barium	Extractable	mg/L	0.0078	0.0001	2.0	Below MAC
Boron	Extractable	mg/L	0.011	0.002	5	Below MAC
Cadmium	Extractable	mg/L	0.00004	0.00001	0.007	Below MAC
Chromium	Extractable	mg/L	0.00023	0.00005	0.05	Below MAC
Copper	Extractable	mg/L	0.0013	0.0005	1 AO; 2 MAC	Below AO
Lead	Extractable	mg/L	0.00027	0.00001	0.005	Below MAC
Selenium	Extractable	mg/L	0.0003	0.0002	0.05	Below MAC
Strontium	Extractable	mg/L	0.14	0.0001	7.0	Below MAC
Uranium	Extractable	mg/L	0.00004	0.00001	0.02	Below MAC
Vanadium	Extractable	mg/L	0.00053	0.00005		
Zinc	Extractable	mg/L	0.015	0.0005	5.0	Below AO
Microbiological Analysis						
Total Coliforms	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Escherichia coli	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Heterotrophic Count - Aerobic	SimPlate	MPN/mL	<2.0	2		
Physical and Aggregate Properties						
Colour	True	Colour units	<5	5		
Turbidity		NTU	0.21	0.1	0.1/0.3/1.0 OG	
Routine Water						
pH			7.13	0.01	7.0-10.5	Within Range
pH - Holding Time			Exceeded			
Temp. of observed pH		°C	24.2			
Electrical Conductivity	at 25 °C	µS/cm	321	1		
Calcium	Extractable	mg/L	30	0.01		
Iron	Extractable	mg/L	<0.004	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	7.2	0.02		
Manganese	Extractable	mg/L	0.007	0.001	0.02 AO; 0.12 MAC	Below AO
Potassium	Extractable	mg/L	1.5	0.04		
Silicon	Extractable	mg/L	10	0.005		
Sodium	Extractable	mg/L	12	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	46	5		
Chloride	Dissolved	mg/L	52.3	0.05	250	Below AO
Fluoride	Dissolved	mg/L	0.02	0.01	1.5	Below MAC

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Lot ID: **1782171**
Control Number:
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Report Number: 3087296
Report Type: Final Report

Reference Number	1782171-3
Sample Date	December 06, 2024
Sample Time	09:18
Sample Location	
Sample Description	RW 3-93/4 / 9.8 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water - Continued						
Nitrate - N	Dissolved	mg/L	2.65	0.01	10	Below MAC
Nitrite - N	Dissolved	mg/L	<0.01	0.01	1	Below MAC
Sulfate (SO4)	Dissolved	mg/L	16.3	0.1	500	Below AO
Hardness	as CaCO3 (extractable)	mg/L	104	1		
Total Dissolved Solids	Extractable	mg/L	186	1	500	Below AO

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Lot ID: **1782171**
Control Number:
Date Received: Dec 6, 2024
Date Reported: Dec 11, 2024
Report Number: 3087296
Report Type: Final Report

Reference Number	1782171-4
Sample Date	December 06, 2024
Sample Time	09:01
Sample Location	
Sample Description	RW 7-00/13 / 9.8 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Metals Extractable						
Aluminum	Extractable	mg/L	<0.001	0.001	0.1 OG; 2.9 MAC	Below OG
Antimony	Extractable	mg/L	0.00002	0.00002	0.006	Below MAC
Arsenic	Extractable	mg/L	0.0004	0.0001	0.010	Below MAC
Barium	Extractable	mg/L	0.0063	0.0001	2.0	Below MAC
Boron	Extractable	mg/L	0.011	0.002	5	Below MAC
Cadmium	Extractable	mg/L	0.00002	0.00001	0.007	Below MAC
Chromium	Extractable	mg/L	0.00030	0.00005	0.05	Below MAC
Copper	Extractable	mg/L	0.0018	0.0005	1 AO; 2 MAC	Below AO
Lead	Extractable	mg/L	0.00016	0.00001	0.005	Below MAC
Selenium	Extractable	mg/L	0.0002	0.0002	0.05	Below MAC
Strontium	Extractable	mg/L	0.11	0.0001	7.0	Below MAC
Uranium	Extractable	mg/L	0.00001	0.00001	0.02	Below MAC
Vanadium	Extractable	mg/L	0.00051	0.00005		
Zinc	Extractable	mg/L	0.012	0.0005	5.0	Below AO
Microbiological Analysis						
Total Coliforms	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Escherichia coli	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Heterotrophic Count - Aerobic	SimPlate	MPN/mL	<2.0	2		
Physical and Aggregate Properties						
Colour	True	Colour units	<5	5		
Turbidity		NTU	0.20	0.1	0.1/0.3/1.0 OG	
Routine Water						
pH			7.22	0.01	7.0-10.5	Within Range
pH - Holding Time			Exceeded			
Temp. of observed pH		°C	24.2			
Electrical Conductivity	at 25 °C	µS/cm	242	1		
Calcium	Extractable	mg/L	23	0.01		
Iron	Extractable	mg/L	<0.004	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	5.5	0.02		
Manganese	Extractable	mg/L	0.002	0.001	0.02 AO; 0.12 MAC	Below AO
Potassium	Extractable	mg/L	1.2	0.04		
Silicon	Extractable	mg/L	10	0.005		
Sodium	Extractable	mg/L	8.3	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	40	5		
Chloride	Dissolved	mg/L	33.9	0.05	250	Below AO
Fluoride	Dissolved	mg/L	0.01	0.01	1.5	Below MAC

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Lot ID: **1782171**
Control Number:
Date Received: Dec 6, 2024
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Report Number: 3087296
Report Type: Final Report

Reference Number	1782171-4
Sample Date	December 06, 2024
Sample Time	09:01
Sample Location	
Sample Description	RW 7-00/13 / 9.8 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water - Continued						
Nitrate - N	Dissolved	mg/L	2.55	0.01	10	Below MAC
Nitrite - N	Dissolved	mg/L	<0.01	0.01	1	Below MAC
Sulfate (SO4)	Dissolved	mg/L	14.1	0.1	500	Below AO
Hardness	as CaCO3 (extractable)	mg/L	79	1		
Total Dissolved Solids	Extractable	mg/L	148	1	500	Below AO

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Lot ID: **1782171**
Control Number:
Date Received: Dec 6, 2024
Date Reported: Dec 11, 2024
Report Number: 3087296
Report Type: Final Report

Reference Number	1782171-5
Sample Date	December 06, 2024
Sample Time	08:08
Sample Location	
Sample Description	Res_B / 9.8 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Metals Extractable						
Aluminum	Extractable	mg/L	0.004	0.001	0.1 OG; 2.9 MAC	Below OG
Antimony	Extractable	mg/L	0.00007	0.00002	0.006	Below MAC
Arsenic	Extractable	mg/L	0.0009	0.0001	0.010	Below MAC
Barium	Extractable	mg/L	0.016	0.0001	2.0	Below MAC
Boron	Extractable	mg/L	0.020	0.002	5	Below MAC
Cadmium	Extractable	mg/L	0.00002	0.00001	0.007	Below MAC
Chromium	Extractable	mg/L	0.00020	0.00005	0.05	Below MAC
Copper	Extractable	mg/L	<0.0005	0.0005	1 AO; 2 MAC	Below AO
Lead	Extractable	mg/L	<0.00001	0.00001	0.005	Below MAC
Selenium	Extractable	mg/L	0.0004	0.0002	0.05	Below MAC
Strontium	Extractable	mg/L	0.12	0.0001	7.0	Below MAC
Uranium	Extractable	mg/L	0.00011	0.00001	0.02	Below MAC
Vanadium	Extractable	mg/L	0.00048	0.00005		
Zinc	Extractable	mg/L	0.0018	0.0005	5.0	Below AO
Microbiological Analysis						
Total Coliforms	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Escherichia coli	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Heterotrophic Count - Aerobic	SimPlate	MPN/mL	<2.0	2		
Physical and Aggregate Properties						
Colour	True	Colour units	<5	5		
Turbidity		NTU	0.14	0.1	0.1/0.3/1.0 OG	
Routine Water						
pH			7.50	0.01	7.0-10.5	Within Range
pH - Holding Time			Exceeded			
Temp. of observed pH		°C	24.2			
Electrical Conductivity	at 25 °C	µS/cm	308	1		
Calcium	Extractable	mg/L	32	0.01		
Iron	Extractable	mg/L	<0.004	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	7.8	0.02		
Manganese	Extractable	mg/L	0.009	0.001	0.02 AO; 0.12 MAC	Below AO
Potassium	Extractable	mg/L	2.0	0.04		
Silicon	Extractable	mg/L	9.0	0.005		
Sodium	Extractable	mg/L	13	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	73	5		
Chloride	Dissolved	mg/L	34.5	0.05	250	Below AO
Fluoride	Dissolved	mg/L	0.02	0.01	1.5	Below MAC

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Report Number: 3087296
Report Type: Final Report

Reference Number	1782171-5
Sample Date	December 06, 2024
Sample Time	08:08
Sample Location	
Sample Description	Res_B / 9.8 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water - Continued						
Nitrate - N	Dissolved	mg/L	1.50	0.01	10	Below MAC
Nitrite - N	Dissolved	mg/L	<0.01	0.01	1	Below MAC
Sulfate (SO4)	Dissolved	mg/L	20.7	0.1	500	Below AO
Hardness	as CaCO3 (extractable)	mg/L	111	1		
Total Dissolved Solids	Extractable	mg/L	185	1	500	Below AO

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Analytical Report

Bill To: Clearbrook Waterworks District
2889 Grandview Crescent
Abbotsford, BC, Canada
V2T 2R6
Attn: Accounts Payable
Sampled By:
Company:

Project ID:
Project Name:
Project Location:
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1782171**
Control Number:
Date Received: Dec 6, 2024
Date Reported: Dec 11, 2024
Report Number: 3087296
Report Type: Final Report

Reference Number	1782171-6
Sample Date	December 06, 2024
Sample Time	10:18
Sample Location	
Sample Description	32350 Diamond Cres. / 9.8 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Metals Extractable						
Aluminum	Extractable	mg/L	<0.001	0.001	0.1 OG; 2.9 MAC	Below OG
Antimony	Extractable	mg/L	0.00007	0.00002	0.006	Below MAC
Arsenic	Extractable	mg/L	0.0009	0.0001	0.010	Below MAC
Barium	Extractable	mg/L	0.015	0.0001	2.0	Below MAC
Boron	Extractable	mg/L	0.020	0.002	5	Below MAC
Cadmium	Extractable	mg/L	0.00001	0.00001	0.007	Below MAC
Chromium	Extractable	mg/L	0.00017	0.00005	0.05	Below MAC
Copper	Extractable	mg/L	0.0027	0.0005	1 AO; 2 MAC	Below AO
Lead	Extractable	mg/L	0.00029	0.00001	0.005	Below MAC
Selenium	Extractable	mg/L	0.0004	0.0002	0.05	Below MAC
Strontium	Extractable	mg/L	0.11	0.0001	7.0	Below MAC
Uranium	Extractable	mg/L	0.00008	0.00001	0.02	Below MAC
Vanadium	Extractable	mg/L	0.00047	0.00005		
Zinc	Extractable	mg/L	0.0068	0.0005	5.0	Below AO
Microbiological Analysis						
Total Coliforms	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Escherichia coli	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Heterotrophic Count - Aerobic	SimPlate	MPN/mL	<2.0	2		
Physical and Aggregate Properties						
Colour	True	Colour units	<5	5		
Turbidity		NTU	0.11	0.1	0.1/0.3/1.0 OG	
Routine Water						
pH			7.48	0.01	7.0-10.5	Within Range
pH - Holding Time			Exceeded			
Temp. of observed pH		°C	24.2			
Electrical Conductivity	at 25 °C	µS/cm	305	1		
Calcium	Extractable	mg/L	28	0.01		
Iron	Extractable	mg/L	<0.004	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	6.8	0.02		
Manganese	Extractable	mg/L	0.003	0.001	0.02 AO; 0.12 MAC	Below AO
Potassium	Extractable	mg/L	1.7	0.04		
Silicon	Extractable	mg/L	9.2	0.005		
Sodium	Extractable	mg/L	11	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	70	5		
Chloride	Dissolved	mg/L	35.1	0.05	250	Below AO
Fluoride	Dissolved	mg/L	0.02	0.01	1.5	Below MAC

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Reference Number	1782171-6
Sample Date	December 06, 2024
Sample Time	10:18
Sample Location	
Sample Description	32350 Diamond Cres. / 9.8 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water - Continued						
Nitrate - N	Dissolved	mg/L	1.62	0.01	10	Below MAC
Nitrite - N	Dissolved	mg/L	<0.01	0.01	1	Below MAC
Sulfate (SO4)	Dissolved	mg/L	20.4	0.1	500	Below AO
Hardness	as CaCO3 (extractable)	mg/L	98	1		
Total Dissolved Solids	Extractable	mg/L	177	1	500	Below AO

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Lot ID: **1782171**
Control Number:
Date Received: Dec 6, 2024
Date Reported: Dec 11, 2024
Report Number: 3087296
Report Type: Final Report

Reference Number	1782171-7
Sample Date	December 06, 2024
Sample Time	08:21
Sample Location	
Sample Description	2464 Sunnyside Pl. / 9.8 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Metals Extractable						
Aluminum	Extractable	mg/L	0.006	0.001	0.1 OG; 2.9 MAC	Below OG
Antimony	Extractable	mg/L	0.00008	0.00002	0.006	Below MAC
Arsenic	Extractable	mg/L	0.0010	0.0001	0.010	Below MAC
Barium	Extractable	mg/L	0.016	0.0001	2.0	Below MAC
Boron	Extractable	mg/L	0.020	0.002	5	Below MAC
Cadmium	Extractable	mg/L	0.00001	0.00001	0.007	Below MAC
Chromium	Extractable	mg/L	0.00041	0.00005	0.05	Below MAC
Copper	Extractable	mg/L	0.0078	0.0005	1 AO; 2 MAC	Below AO
Lead	Extractable	mg/L	0.00050	0.00001	0.005	Below MAC
Selenium	Extractable	mg/L	0.0004	0.0002	0.05	Below MAC
Strontium	Extractable	mg/L	0.12	0.0001	7.0	Below MAC
Uranium	Extractable	mg/L	0.00012	0.00001	0.02	Below MAC
Vanadium	Extractable	mg/L	0.00050	0.00005		
Zinc	Extractable	mg/L	0.021	0.0005	5.0	Below AO
Microbiological Analysis						
Total Coliforms	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Escherichia coli	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Heterotrophic Count - Aerobic	SimPlate	MPN/mL	<2.0	2		
Physical and Aggregate Properties						
Colour	True	Colour units	<5	5		
Turbidity		NTU	0.18	0.1	0.1/0.3/1.0 OG	
Routine Water						
pH			7.59	0.01	7.0-10.5	Within Range
pH - Holding Time			Exceeded			
Temp. of observed pH		°C	24.1			
Electrical Conductivity	at 25 °C	µS/cm	308	1		
Calcium	Extractable	mg/L	32	0.01		
Iron	Extractable	mg/L	0.012	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	7.6	0.02		
Manganese	Extractable	mg/L	0.006	0.001	0.02 AO; 0.12 MAC	Below AO
Potassium	Extractable	mg/L	2.1	0.04		
Silicon	Extractable	mg/L	8.9	0.005		
Sodium	Extractable	mg/L	13	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	77	5		
Chloride	Dissolved	mg/L	31.8	0.05	250	Below AO
Fluoride	Dissolved	mg/L	0.02	0.01	1.5	Below MAC

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Reference Number	1782171-7
Sample Date	December 06, 2024
Sample Time	08:21
Sample Location	
Sample Description	2464 Sunnyside Pl. / 9.8 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water - Continued						
Nitrate - N	Dissolved	mg/L	1.36	0.01	10	Below MAC
Nitrite - N	Dissolved	mg/L	<0.01	0.01	1	Below MAC
Sulfate (SO4)	Dissolved	mg/L	21.3	0.1	500	Below AO
Hardness	as CaCO3 (extractable)	mg/L	111	1		
Total Dissolved Solids	Extractable	mg/L	184	1	500	Below AO

Approved by:

Rachel Eden , B. Sc.
Operations Manager

Data have been validated by Analytical Quality Control and Element's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

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Methodology and Notes

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Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Alk, pH, EC, Turb in water (BC)	APHA	*	Alkalinity - Titration Method, 2320 B	Dec 06, 2024	Element Vancouver
Alk, pH, EC, Turb in water (BC)	APHA	*	Conductivity, 2510 B	Dec 06, 2024	Element Vancouver
Alk, pH, EC, Turb in water (BC)	APHA	*	pH - Electrometric Method, 4500-H+ B	Dec 06, 2024	Element Vancouver
Anions by IEC in water (VAN)	APHA	*	Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	Dec 06, 2024	Element Vancouver
Heterotrophic (Standard) Plate Count (Aerobic SP) - VAN	APHA		Enzyme Substrate Method, 9215 E	Dec 06, 2024	Element Vancouver
Metals SemiTrace (Extractable) in water (VAN)	US EPA	*	Metals & Trace Elements by ICP-AES, 6010C	Dec 09, 2024	Element Vancouver
Total and E-Coli - Colilert - DW (VAN)	APHA		Enzyme Substrate Test, APHA 9223 B	Dec 06, 2024	Element Vancouver
Trace Metals (extractable) in Water (VAN)	US EPA	*	Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Dec 09, 2024	Element Vancouver
True Color in water (VAN)	APHA	*	Spectrophotometric - Single Wavelength Method, 2120 C	Dec 06, 2024	Element Vancouver
Turbidity - Water (VAN)	APHA	*	Turbidity - Nephelometric Method, 2130 B	Dec 06, 2024	Element Vancouver

** Reference Method Modified*

References

APHA	Standard Methods for the Examination of Water and Wastewater
US EPA	US Environmental Protection Agency Test Methods

Guidelines

Guideline Description	Health Canada GCDWQ
Guideline Source	Guidelines for Canadian Drinking Water Quality, Health Canada, August 2024
Guideline Comments	MAC = Maximum Acceptable Concentration AO = Aesthetic Objective OG = Operational Guideline for Water Treatment Plants (does not apply to private groundwater wells). Refer to Health Canada for complete guidelines at www.hc-sc.gc.ca

Comments:

- Reduction of analytical volume was necessary for chloride analysis to bring results within the analytical range for lot 1782171. Detection limits are adjusted accordingly.
- The analysis of water samples 1782171-1,2,3,4,5,6,7 are below Maximum Acceptable Concentrations for the chemical and bacteriological health related guidelines specified by the June 2024 Guidelines for Canadian Drinking Water Quality for the parameters tested.

The comparison of test results to guideline limits is provided for information purposes only. This is not to be taken as a statement of conformance / nonconformance to any guideline, regulation or limit. The data user is responsible for all conclusions drawn with respect to the data and is advised to consult official regulatory references when evaluating compliance.

Please direct any inquiries regarding this report to our Client Services group.
Results relate only to samples as submitted.

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