

Clearbrook Waterworks District 2020 Water Quality Report



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Release date: May 10, 2021.

Cover image: Construction of the replacement of Reservoir B in progress.

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Foreword

Clearbrook Waterworks District (CWD) is pleased to present the 2020 Annual Water Quality Report, prepared in collaboration with Kalwij Water Dynamics Inc. (KWD), CWD's hydrogeological consultant. The report includes contributions from James Wiens (CWD's Field Supervisor) and Ryan Federau (CWD's Water Quality Technician).

Through this report we would like to inform the rate payers about our water system and show our ongoing commitment by the CWD Board of Trustees and staff to deliver the highest quality water. CWD system operators are highly trained and skilled and certified through the Environmental Operator's Certification Program, with Level 1 and Level 2 Water Distribution System Operators. CWD complies with all provincial and federal regulations relating to the supply and delivery of potable water, while promoting responsible stewardship of our natural resource. We value our collaboration with Fraser Health Authority and their feedback. We remain committed to the protection of public health while ensuring an uninterrupted supply of drinking water to our rate payers.

CWD employs a holistic approach to water quality management, utilizing proactive maintenance schedules and asset management practices while also adopting the latest technologies where possible to achieve efficiencies in operation and redundancies where safety is concerned. CWD recognizes the need of "due diligence" when it comes to managing and maintaining their production wells and the natural asset the wells withdraw water from: the Abbotsford-Sumas Aquifer.

In July of 2020, CWD officially moved the office from Clearbrook Road to the reservoir site on 2889 Grandview Crescent, thereby consolidating office and works yard into once facility. CWD has installed a kiosk at the entrance of the reservoir site for meeting with rate payers (by appointment only).

In October of 2020, CWD commenced with the reservoir replacement project, starting with the decommissioning of Reservoir B. The new reservoir will have a volumetric capacity of 4,500 cubic metres. Construction work is in full progress and the new reservoir is expected to be operational in fall of 2021.

We would like to thank our stakeholders (rate payers) for supporting us and sharing with us the appreciation for the water system. We are very thankful for their willingness to put up with our ongoing maintenance and construction efforts, and their curious nature. We very much appreciate the offerings of tea and coffee on cold days!

Please continue to visit our website for information.

Respectfully submitted,

Jason Hildebrandt
Corporate Administrator

Units & 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
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
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
Most Probable Number	MPN
Nephelometric Turbidity Units	NTU
Slime Forming Bacteria	SLYM
Sulphate Reducing Bacteria	SRB
Supervisory Control and Data Acquisition	SCADA

1. Introduction

This 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). Our water system has been in operation since 1954 (year of incorporation) and is supplied solely by groundwater which is extracted from the Abbotsford-Sumas Aquifer.

As per regulatory requirements, under the *Drinking Water Protection Act*¹, 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 Drinking Water Officers of FHA to ensure safe drinking water at all times. A message from the Fraser Health Authority, dated February 1, 2021, regarding metals in drinking water ("*Flush Message*") is included as **Appendix A**.

CWD's website 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. CWD website: <https://www.clearbrookwaterworks.com>.

For further information about the role of FHA in drinking water safety:

<https://www.fraserhealth.ca/Service-Directory/Services/Health-Protection-Services/drinking-water-safety-program>

For information about preventing water-borne infections for people with weakened immune systems:

<https://www.healthlinkbc.ca/healthlinkbc-files/preventing-water-borne-infection>

Section 2 of this report provides an overview of CWD's water system. **Section 3** provides an overview of CWD's groundwater monitoring program. **Section 4** summarizes selected work and projects completed in 2020 and projects planned for 2021. **Section 5** provides information about our water quality assurance protocol and presents the annual report from CWD's water quality technician. **Section 6** presents information about the 2020 water quality analysis results as well as the results of the Bacteriological Activity Reaction Test (BART).

¹ http://www.bclaws.ca/civix/document/id/complete/statreg/01009_01.

2. Water System Overview



IMAGE | PUMP STATION AT THE RESERVOIR SITE.

The Water System

CWD's supply and distribution system provides potable water to residential dwellings and commercial buildings (1,376 active connections as of the end of 2020), serving a population of about 10,000 people. 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).

A combined length of approximately 32 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), and the reservoirs have a combined storage of 6,820 m³. In October of 2020, Reservoir B was placed offline and was demolished in the same month. Currently construction is underway for the replacement of Reservoir B, thereby increasing combined storage capacity to 9050 m³. The new reservoir is scheduled to be online in fall of 2021.

CWD's operators are all EOCP-certified² Water Distribution System Operators Level 1 (one operator) and Level 2 (three operators).

² Environmental Operators Certificate Program; for more information: <http://eocp.ca>.

Our Production Wells

The water system relies on four replacement production wells for water supply, located at our Lynden and Autumn Well Fields at Lynden Street and Autumn Avenue, respectively (with two production wells at each well field). All four production wells replace old well infrastructure and were constructed under CWD's Well Replacement Program (from 2010 to 2017).



IMAGE | AUTUMN WELL FIELD.

Supervisory Control and Data Acquisition

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.

Emergency Response Plan

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.

Community Outreach

CWD organizes open houses on an annual basis, typically held in July or August. 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. Unfortunately, due to the COVID-19 pandemic we were unable to host this event in 2020 and we will not organize this event in 2021, but we hope to be able to welcome everyone to an Open House in 2022.

3. Water Supply Source Monitoring

3.1 Our Aquifer

CWD’s production wells extract water from the Abbotsford-Sumas Aquifer (**Figure 3-1**). This trans-boundary aquifer covers an area of approximately 161 km² 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 overlying 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 a high-productive aquifer. 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 significant 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.

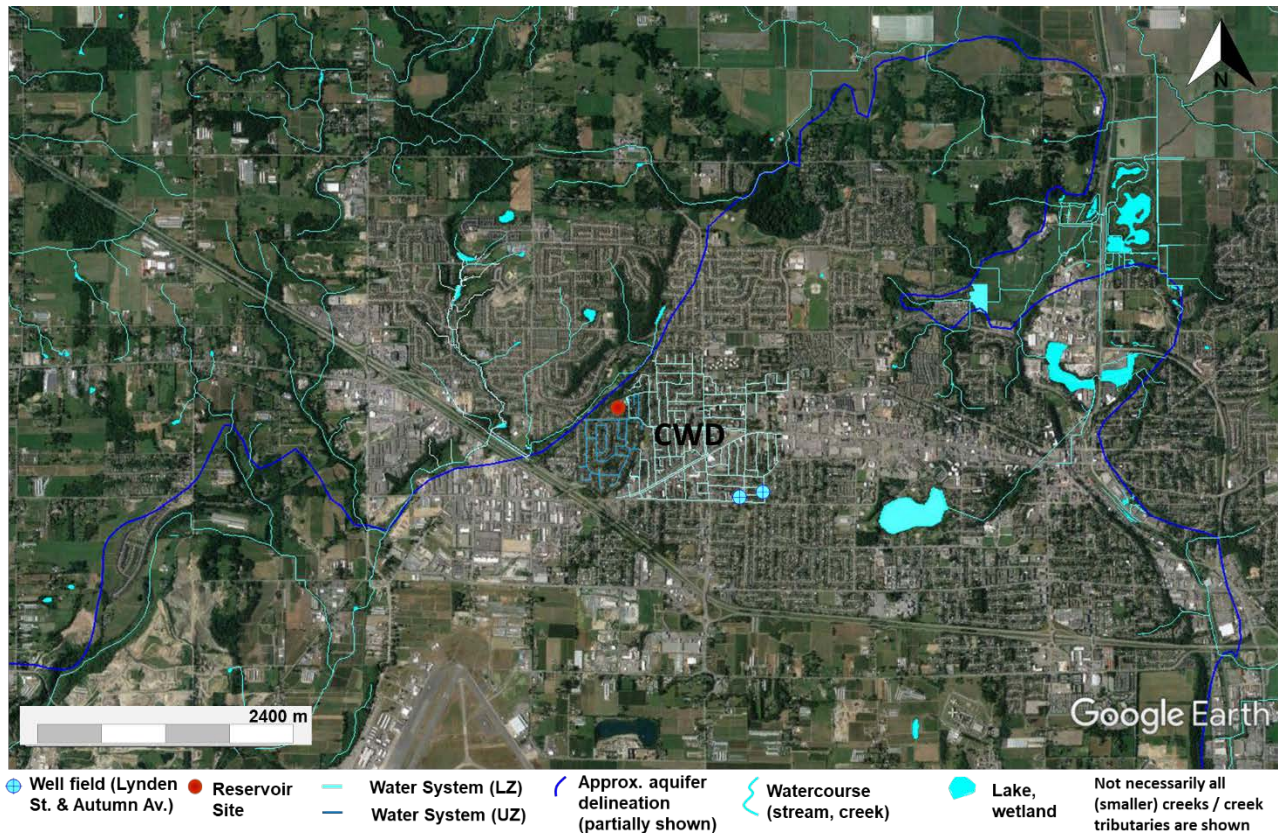


Figure 3-1 Partial Delineation of the Abbotsford-Sumas Aquifer and CWD’s Water System.



IMAGE | CLEARBROOK WATERWORKS DISTRICT IS IN A DESIGNATED GROUNDWATER PROTECTION AREA.

Groundwater Licensing

As required under the Provincial *Water Sustainability Act* (WSA)³ and *Water Sustainability Regulation*⁴ CWD has applied for an existing groundwater use license for their production wells. The application was submitted in January 2017. The Ministry of Forests, Lands, Natural Resource Operations and Rural Development has not yet issued the groundwater licence. This delay in issuing a groundwater licence does not affect CWD's groundwater use.

³ <http://www.bclaws.ca/civix/document/id/complete/statreg/14015>

⁴ http://www.bclaws.ca/civix/document/id/complete/statreg/36_2016

3.2 Groundwater Monitoring

CWD has had a comprehensive well 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.

Groundwater Withdrawal

CWD’s production wells have been operating (in rotation) throughout 2020. **Figure 3-2** shows the monthly groundwater withdrawal for 2020. The figure shows the monthly volumetric contribution of each well. The total height of each bar reflects combined monthly groundwater withdrawal volume (denoted on the y-axis). For comparison purposes, the figure also shows total monthly groundwater withdrawal volumes of 2019 data (shown as a green circular markers). (The lines which connect markers in the figure have no meaning.)

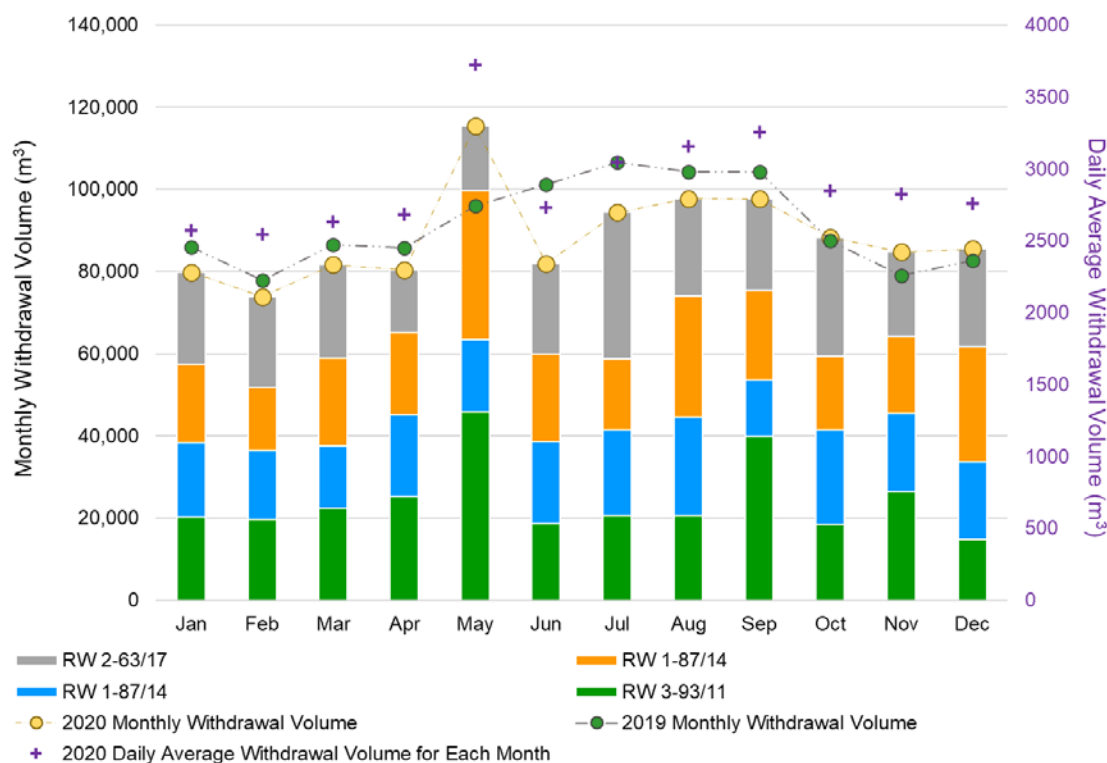


Figure 3-2 Monthly Groundwater Withdrawal Volumes (2020).

Based on 2020 data:

- The annual total volume of combined withdrawal is 1,052,567 m³ (1.1 BL).
- Combined average monthly withdrawal volume is 87,714 m³ (87.7 ML).
- The combined average daily withdrawal volume is 2,884 m³ (2.9 ML).
- The average pumping rate is 49.2 L/s (780 gpm)
- The combined annual energy cost for extracting water is \$41,524 (4 ¢/m³)

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 3-3**, 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 important information for safeguarding the sustainability of the aquifer.

The sine-shaped data series illustrates seasonal variation in groundwater levels within a year and between years. The observed trend suggests periods of (seasonal) *groundwater recharge* during which groundwater levels rise (indicated by the *blue arrow* in the figure) and periods during which the groundwater level declines (*groundwater discharge*), indicated by the *red arrow* in the figure. The figure illustrates variation in the amount of recharge and discharge between years.

In 2020, there was a positive balance suggesting that the groundwater decline (discharge) in 2020 (from early spring to late fall) was less than the groundwater recharge during the 2019/2020 winter season. This suggests sustainable groundwater use in 2020; the opposite pattern (decline exceeding recharge) was observed for 2018 and 2019.

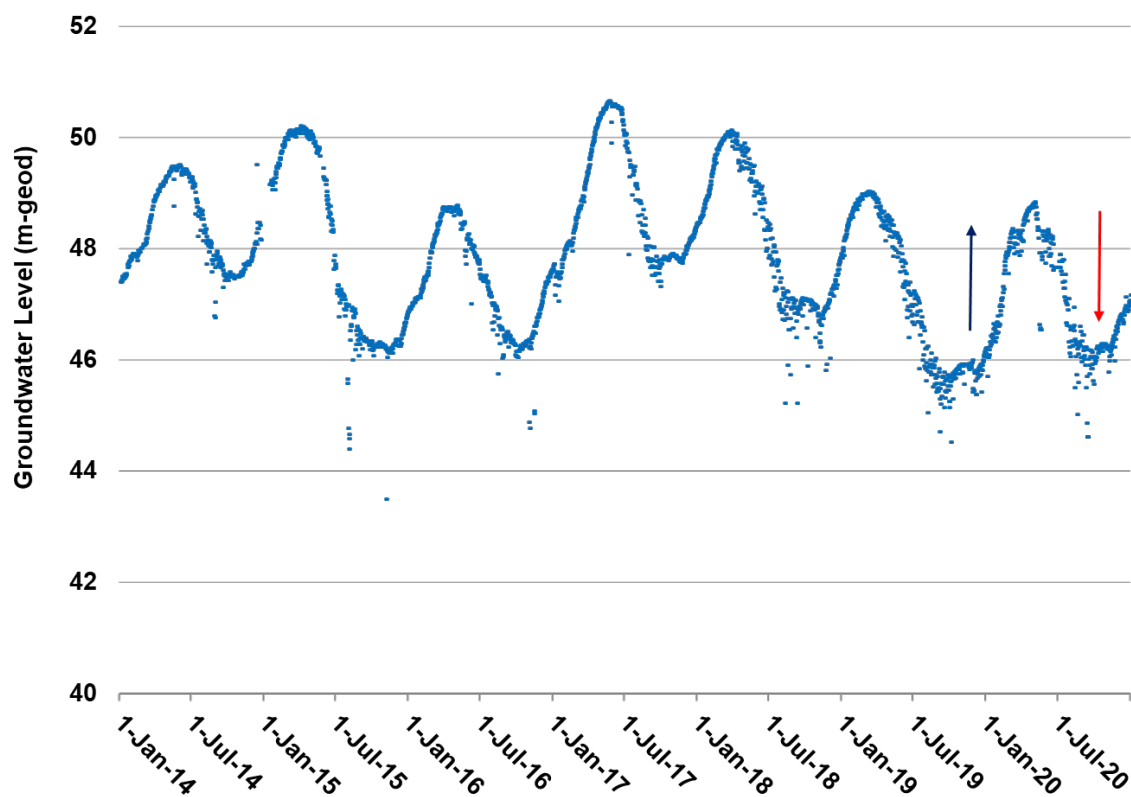


Figure 3-3 Static Groundwater Level Trend Observed at CWD MW 6-59 (2014-2020).

4. Selected Work and Projects

4.1 Maintenance Work, On-Going Programs and Projects Completed in 2020



IMAGE | WATER SYSTEM FLUSHING IN PROGRESS.

Water Quality Monitoring

This is an on-going activity and is addressed in **Sections 5 & 6**.

Water System Maintenance

Water system maintenance is on-going throughout the year. The following is a list of selected maintenance work completed in 2020:

- Completion of some water system flushing in fall (103 hydrants were flushed).
- Leak detection: none were observed for water mains; four leaks were repaired by CWD on service lines (on CWD's site) and two service lines were replaced.
- Following up on 628 work orders and addressing 159 *BC 1 Call* requests marking out infrastructure. CWD uses *Mobile311* for their asset maintenance and work order management.
- Two fire hydrants were rebuilt following use by the fire Department.
- Instrumentation checks (level transmitters) were completed for all production wells and the designated monitoring well.
- Ground maintenance of all CWD sites throughout the year.

- Various construction and improvement work at the reservoir site, including the construction of a lock block retaining wall.



IMAGE | DISTRIBUTION LINE LEAK REPAIR (LEFT) AND NEWLY CONSTRUCTED LOCK RETAINING WALL (RIGHT).

New Development

For new development on James Street, the CWD field crew completed inspections of the 250-mm water main, including quality control, at the time of the construction of the water main by a third-party.

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.

Furthermore, 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.

Groundwater at Risk of Containing Pathogens (Study)

A study was undertaken by CWD's hydrogeologist (KWD) to determine the likelihood of groundwater at risk of containing pathogens. Such study entails, among others, a screening of the water source for hazards that increase the risk of a groundwater source containing pathogens. Based on the results of the study, it was concluded that CWD's groundwater sources are at low risk of containing pathogens. In addition to CWD's long-term documented records of excellent groundwater quality, key to the conclusion is the presence of the natural barrier (silt and clay aquitard) above the aquifer, as identified throughout CWD's service area (inferred from available information). The existing long-term microbiological groundwater monitoring program CWD has in place is a suitable course of action to ensure safe supply from the groundwater sources.

4.2 Capital Projects Completed in 2020



IMAGE | THE NEW OFFICE AT THE OPERATIONS FACILITY.

New CWD Office at the Reservoir Site

Interior changes were made to the operations facility located at 2889 Grandview Crescent in order to accommodate CWD's administration office in the same building, thereby closing CWD's office on Clearbrook Road. The official move took place in July of 2020. CWD has saved significant cost by consolidating administration and operations into one facility. A kiosk was built at the entrance gate to meet visitors in case needed (by appointment only).

Reservoir Replacement Program

The project entails the replacement of the existing 2.26 ML Reservoir B with a 4.5 ML capacity reservoir. In 2019, the project was awarded to Onsite Engineering Ltd. to provide the consulting engineering and design services. In October 2020 Reservoir B was both emptied and decommissioned. Actual construction of the new reservoir started in January 2021. Reservoir construction is completed by Industra Construction Corp with structural design and inspection from DN Tanks Inc.



IMAGE | THE DEMOLITION OF RESERVOIR B COMMENCED ON OCTOBER 15, 2020.

Reservoir C Maintenance

CWD reservoirs are routinely professionally cleaned, about every 4 years. In May 2020, Reservoir C was cleaned by Phoenix Marine Services Inc.

Permanent Closure of Wells at 2713 Janzen Street (Janzen property)

In preparation of selling the Janzen property CWD closed their long-term monitoring well (MW 4-54) and test well (TW 14-01). In addition, for a previously decommissioned monitoring well at Janzen, the casing was cut deeper below grade than originally cut in 2012. The illustrations below show: (1) the completed excavation around the wellhead after which the casing will be cut and section removed; (2) the well casing which remains in place is fully filled with Bentonite clay chips (a sealant); and (3) the well was capped by welding a steel plate onto the casing (steel plate shown beside the well casing filled with Bentonite). The well closure work was completed by Fyfe Well & Water Services.



IMAGE | WELL CLOSURE WORK IN PROGRESS



IMAGE | PART OF THE JANZEN YARD & WELL FIELD CLOSURE WAS THE REMOVAL OF THE PUMP HOUSE WHICH HOUSED MONITORING WELL 4-54 (WHICH WAS CWD'S FIRST PRODUCTION WELL)

RW 3-93/11 Well Maintenance

CWD has a comprehensive well maintenance program in place which entails the implementation of so-called well rehabilitation every 4 to 5 years for each production well (on a rotational basis). This ensures that the wells remain in good condition. This was the second well rehabilitation for RW 3-93/11, located on Lynden Well Field, since being commissioned in 2011 (the first one was completed in 2015). The well rehabilitation was completed in the week of December 14, 2020. RW 3-93/11 well rehabilitation procedure included the mechanical brushing of the interior of the well (with the well screen as primary focus) and a chemical (acid) treatment, targeting the well screen area, designed to loosen, dislodge and dissolve mineral incrustations accumulated on screen slots and possibly on geological formation (just) outside the well screen. The well rehabilitation was successfully completed, thereby removing observed mineral incrustations in the well screen section. This was confirmed by down-hole video inspections (completed before and after the well rehabilitation). The well rehabilitation was completed by Fyfe Well & Water Services.



IMAGE | WELL REHABILITATION FIELD SETUP.

4.3 Scheduled Capital Projects for 2021

The following projects are scheduled for 2021:

- **Reservoir Replacement:** the construction work commenced in late fall 2020 and is scheduled for completion in fall of 2021.
- **Water Main Upgrade:** replacement of high pressure zone and low pressure zone water main at Palm Crescent Loop.
- **Advanced Metering Infrastructure (AMI):** Continuing with the installation of AMI meters throughout 2021. The plan is to have all existing water meters replaced with AMI by 2023.



IMAGE | EXCAVATION WORK IN PROGRESS FOR THE NEW RESERVOIR (JANUARY 18, 2021).

4.4 Scheduled Well Maintenance Project for 2021

RW 2-63/17 Well Maintenance: under CWD's Well Preventative Maintenance Program, well maintenance (rehabilitation) is scheduled for this production well. This will be its first well rehabilitation since being commissioned in 2017. Well maintenance includes mechanical cleaning (brushing) and chemical treatment. A down-hole video inspection will be completed to assess the condition of the interior of the well (in particular the well screen) pertaining to mineral deposits (iron and manganese precipitates) and biofouling.

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*⁵, that this is done within 6 months of the end of the calendar year.

The Drinking Water Protection Regulation 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 Columbia⁶.

Therefore, as a water purveyor, we are required to have our water analyzed by an accredited laboratory. This entails routinely (weekly) monitoring 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 *Escherichia Coliform (E. coli)*.



IMAGE | EXAMPLE OF ONE OF THE INSTALLED SAMPLE STATIONS.

⁵ http://www.bclaws.ca/civix/document/id/loo71/loo71/10_200_2003

⁶ Environmental health officers routinely inspect, sample and assess community water systems for compliance with the Drinking Water Protection Act and Regulation (www.fraserhealth.ca).

The results of the 2020 microbiological water quality samples submitted to the Center for Disease Control by FHA are included as **Appendix B**. Out of the 202 analyzed water samples collected from the sampling locations, only one (1) sample tested positive for Total coliform (and zero for E. coli). **This means that 99.50% of the analyzed samples showed absence of the tested microbiological parameters, which is an excellent statistic.**

Furthermore, in July 2020 and January 2021, CWD collected water samples from the source (i.e.: the production wells) and from the reservoirs. The water samples were submitted to an accredited water testing laboratory (Element, located in Surrey) for potability analysis (**Section 6.2**). In April and November, water samples were collected for the Bacteriological Activity Reaction Test (BART), completed for all four production wells (**Section 6.3**).

5.2 Water Quality Technician's Report 2020

2020 may have been the oddest year we have ever experienced in modern memory. With that being said, water quality at Clearbrook Waterworks was fairly unremarkable. We started off 2020 with our Berkeley Springs contest entry, along with our dreams of winning another gold medal, "smashed to pieces" on route yet again.

Rumblings of a global pandemic started to become louder, and in early spring, the world as we knew it had been turned upside down. Initial uncertainty led to research into whether the novel Coronavirus (Covid-19) could be waterborne, and what precautions we as public purveyors of drinking water needed to undertake in order to ensure that the water we were delivering was as safe as possible. It was determined that potable water was not a likely vector of viral transmission, but we nonetheless continued to make certain that our water was the highest quality possible.

In order to minimize possible transmission among staff members, the field crew adopted a working schedule that had fewer field staff working at the same time (initially two at a time, then one at a time). This had an impact on productivity, as well as the scope of work that could be taken on. The spring flush was not performed due to the lack of personnel in the field, and the fall flush was abbreviated owing to the workload awaiting the field crew upon return to a more consistent work schedule. One of the positive things that came out of this reduced staff schedule is that the other field crew members were obligated to take over the sampling duties and become more familiar with that process. Sampling otherwise continued as usual, and 257 samples were taken in-house, whereas 202 samples were analyzed by BC Center for Disease Control.

BART results showed some increased activity, which could be due the change in procedure in April of 2019, increasing well downtime from 48 hours (2 days) to 168 hours (1 week). It seems that we may be seeing a seasonal change in bacterial activity, but it is still a bit early into this procedure to be drawing correlations.

Reservoir B was taken offline and demolished in 2020, with the replacement reservoir scheduled for completion in the second half of 2021. Divers performed a cleaning in Reservoir C during the summer.

A large portion of the AC watermain on James St was replaced with upsized Bionax pipe by Bianco Developments Ltd., and testing and chlorination was performed by ABC Pipe Cleaning Services (ABC). Upon completion of the watermain, ABC had some issues attaining a set of clear samples. After

multiple attempts at flushing and repeated chlorination, 2 sets of consecutive samples passed, and the mains were subsequently tied in to the CWD system under our supervision. As is standard practice, samples in the area were tested in house after the tie-ins in order to confirm sanitary conditions were met while tying in. We encountered several consecutive elevated Total Coliform samples, and after several rounds of flushing and resampling, achieved clear results in the area, as well as the surrounding area.

Our hydrogeologist Dr. Ineke Kalwij completed a GARP (Ground Water at Risk of containing Pathogens) assessment, and upon discussion, we have decided to add some extra sampling for our wells, not limited to increased Total Coliform and E. coli monitoring and added pH and Turbidity testing.

Following up on conversations with our Medical Health Officer, we will be implementing a heterotrophic plate count (HPC) testing program in 2021, which will be performed in-house. While HPC is not necessarily an indicator of general water quality, it will give us yet another baseline data point as to what our water typically contains. The program for 2021 will follow a monthly testing schedule, utilizing all sample points in the distribution system. Upon examination of the results at year end, we will determine whether to continue with this schedule, or choose several static points to be tested monthly.

Hopefully, we will be able to implement a proper flushing program in the spring of 2021, however I suspect that our unidirectional flushing program will have to take a back seat until we are able to increase our field staffing levels, which has proven difficult during these uncertain times.

Ryan Federau

Water Quality Technician, WDSO II

Clearbrook Waterworks District

6. Water Quality Review

6.1 Water Quality Review

Water samples were collected by CWD from the supply source (RW 3-93/11, RW 7-00/13, RW 1-87/14, RW 2-63/17), Reservoir B and Reservoir C⁷ on July 16, 2020 and January 8, 2021 (the latter is considered 2020 year-end water quality analysis). The water samples were analyzed by Element, an accredited laboratory located in Surrey B.C. **Table 6-1** summarizes the results of the water quality analysis, which are evaluated towards the most recent edition of the Canadian Drinking Water Guidelines (Health Canada 2020). The reports prepared by Element are included as **Appendix C**.

Results of the water analysis for the four replacement wells and the reservoirs suggest that the water quality meets the Canadian Drinking Water Guidelines requirements, with exception of:

- ✓ Manganese concentrations of 0.055 mg/L and 0.049 mg/L reported for the water samples collected from **RW 1-87/14** on July 16, 2020, and January 8, 2021, respectively: concentrations value exceeds the Aesthetic Objective (AO) of 0.02 mg/L (AO) - *historically, RW 1-87/14 shows a tendency toward elevated manganese concentration but has been always below Maximum Acceptable Concentration (MAC)*⁸.
- ✓ Total Coliform concentration of 1.0 MPN/100 mL reported for the water sample collected for RW 3-93/11 on January 8, 2021: concentration value exceeds MAC of 0 MPN / 100 mL – *follow up microbiological analysis completed in-house since then confirms concentrations of 0 MPN / 100 mL, and thus meeting MAC guideline limit.*

The Canadian Drinking Water Guidelines Summary Table (September 2020), 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 7.0 (**RW 7-00/13** – Jan 8) to 7.82 (**RW 1-87/14** – Jul 16) which suggests that the sampled water is overall basic (pH > 7.0) – pH = 7.0 is considered “pH neutral”.
- ✓ Water hardness (as CaCO₃)⁹ ranges from 81 mg/L (**RW 7-00/13** – Jul 16 & **RW 2-63/17** – Jan 8) to 119 mg/L (**RW 1-87/14** – Jul 16) and suggests moderately hard water at all four production wells (Moderately hard water ranges from 60 mg/L to less than 120 mg/L.)
- ✓ Turbidity values (> 0.10 NTU) range between 0.12 NTU (**RW 7-00/13** - Jul 16 & Jan 8) and 0.49 NTU (**RW 2-63/17** - Jul 16); these numbers are not concerning as they are below 1.0 NTU.

⁷ Water samples were collected and submitted to Element by Ryan Federau (CWD Water Quality Technician).

⁸ Health (2020) has set AO and MAC guidelines for manganese.

⁹ Hardness is evaluated based on the concentration of calcium carbonate (CaCO₃) because calcium (Ca²⁺) and carbonate (CO₃²⁻) 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)¹⁰. 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 2020).

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.

¹⁰ Guidelines apply to individual filter turbidity for systems using surface water or groundwater under the direct influence of surface water (Health Canada 2019).

Table 6-1 Water Quality Results (2020), Cont'd.

Parameter	Symbol	Units	Guideline Limit	Guideline Type	Analysis									
					Raw water									
Sample Description					RW 3-93/11	RW 3-93/11	RW 7-00/13	RW 7-00/13	RW 1-87/14	RW 1-87/14	RW 2-63/17	RW 2-63/17	Res. C	Res. C
Lot ID (Exova)					1435027	1467880	1435027	1467880	1435027	1467880	1435027	1467880	1435027	1399330
Ref. number					1435027-2	1467880-4	1435027-3	1467880-5	1435027-4	1467880-5	1435027-1	1467880-3	1435027-5	1399330-1
Routine Water														
pH		-	7.0-10.5		7.21	7.07	7.16	7.00	7.82	7.60	7.60	7.31	7.59	7.36
Electrical Conductivity		µS/cm at 25 °C			318	295	239	234	327	278	258	221	264	268
Calcium	Ca	mg/L			31	29	23	24	33	29	27	23	27	28
Iron	Fe	mg/L	0.3	AO	0.009	0.010	<0.004	<0.004	0.010	0.006	<0.004	0.008	<0.004	0.006
Magnesium	Mg	mg/L			7.5	7.1	5.6	5.8	8.8	7.3	6.6	6.0	6.4	6.9
Manganese	Mn	mg/L	0.02 AO; 0.12 MAC		0.002	0.008	0.001	0.002	0.055	0.049	0.011	0.008	0.003	0.005
Potassium	K	mg/L			1.6	1.5	1.2	1.2	2.8	2.3	1.8	1.5	1.7	1.7
Silicon	Si				10.0	9.9	9.9	10	7.0	7.9	8.1	8.8	8.9	9.1
Sodium	Na	mg/L	200	AO	10	9.9	7.5	7.8	16.0	12.0	9.2	7.1	9.0	10
T-Alkalinity	CaCO₃	mg/L			58	55	41	41	129	93	78	66	71	69
Chloride	Cl⁻	mg/L	250	AO	44.5	40.9	30.8	31.7	12.3	15.8	16.3	13.8	22.1	26.7
Fluoride	F⁻	mg/L	1.5	MAC	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrate - N	NO₃⁻	mg/L	10	MAC	1.74	1.96	2.50	2.66	0.02	0.91	1.06	1.44	1.45	1.27
Nitrite - N	NO₂⁻	mg/L	1	MAC	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Carbonate	CO₃	mg/L			-	-	-	-	-	-	-	-	-	-
Bicarbonate	HCO₃	mg/L			-	-	-	-	-	-	-	-	-	-
Sulfate	SO₄	mg/L	500	AO	19.2	20.2	13.6	14.5	21.2	22.7	20.9	20.2	18.9	19.1
Hardness	CaCO₃	mg/L			108	102	81	83	119	102	94	81	94	97
Total Dissolved Solids		mg/L	500	AO	183	177	145	148	191	169	155	141	158	166
Langelier Index		-			-	-	-	-	-	-	-	-	-	-
Saturation pH		pH			-	-	-	-	-	-	-	-	-	-
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	< 1.0	< 1.0	< 1.0
Escherichia coli				MAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Heterotrophic Count		MPN / mL	-		< 2.0	90.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	4.0	< 2.0	21.0

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

Red = Exceeding MAC | Orange = Exceeding AO

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 are analyzed twice a year (in spring and fall) 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 in order 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 bacteria¹¹.

Table 6-2 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, and in a few instances for SLYM (in the well). Only for RW 7-00/13 was high IRB aggressivity detected (in the well – April 16 sample). Typically, IRB was found to be on the borderline of medium and high aggressivity, and HAB reactions are mostly considered having low aggressivity. Overall, and historically, IRB and HAB are the most common bacteria (microbes) identified during the tests.

6.3 Comprehensive Water Quality Analysis

In 2020, a comprehensive water quality analysis was completed, part of CWD's groundwater protection program. The water samples were collected from RW 3-93/11 (August 12), and were submitted to Element (Surrey) for analysis. The water samples were analyzed on various (anthropogenic) constituents such as Chlorinated Hydrocarbons (CH), Polycyclic Aromatic Hydrocarbons (PAHs), Haloacetic Acids (HA), Trihalomethanes (TM), Volatile Organic Compounds (VOC) mercury, various pesticides and herbicides, in addition to trace metals. The results are included in **Appendix D**.

Based on the results there is no concern for the water quality with respect to the analyzed constituents. Where applicable, the results meet the requirements stated in the most recent edition of the Canadian Drinking Water Guidelines (Health 2020). Concentration levels for CH, PAHs, HA, TM, VOC, Pesticides and Herbicides were all below Nominal Detection Limit.

¹¹ <http://www.dbi.ca/BARTs/App-Guide.html>

Table 6-2 BART Results (2020)

Tester	April 2020			November 2020		
	Well	Outside well screen	Formation	Well	Outside well screen	Formation
	(t = 1 min)	(t = 10 min)	(t = 60 min)	(t = 1 min)	(t = 10 min)	(t = 60 min)
	RW 3-93/11 - Apr 4			RW 3-93/11 - Nov 23		
IRB	7 BR [137]	5 BR [2.2 T]	8 BR [34]	-	-	-
SRB	-	-	-	-	-	-
SLYM	8 CL [93]	-	-	-	-	-
HAB	6 DO [446]	-	-	-	-	-
	RW 7-00/13 - Apr 16			RW 7-00/13 - Nov 23		
IRB	4 FO, 5 BR [8.82 T]	6 BR [550]	-	5 BR [2.2 T]	5 BR [2.2 T]	9 BR [34]
SRB	-	-	-	-	-	-
SLYM	-	-	-	7 CL [228]	-	-
HAB	3 UP [47.8 T]	6 DO [446]	6 DO [446]	3 UP [47.8 T]	8 DO [65]	
	RW 1-87/14 - Apr 6			RW 1-87/14 - Nov 30		
IRB	5 FO, 6 BR [2.2 T]	-	-	5 BR [2.2 T]	5 BR [2.2 T]	-
SRB	-	-	-	-	-	-
SLYM	5 CL [2.4 T]	-	-	7 CL [228]	-	-
HAB	5 DO [1.59 T]	-	-	5 DO [1.59 T]	8 DO [65]	8 DO [65]
	RW 2-63/17 - Apr 16			RW 2-63/17 - Nov 30		
IRB	-	-	7 FO BR [137]	5 BR [2.2 T]	-	-
SRB	-	-	-	-	-	-
SLYM	8 CL [93]	-	-	-	-	-
HAB	4 DO [7.44 T]	7 DO [155]		5 DO [1.59 T]	-	-

Key:

- Aggressive
- Borderline moderate-aggressive
- Moderate aggressive
- Low - Not aggressive
- No reaction
- Incl Inconclusive
- 4 Time Lag to Reaction [Days]
- [550] Concentration in PAC/mL
- t Pumping duration before taking water sample (min)

Reactions:

- BR Brown ring
- FO Foam
- CL Cloudy growth
- DO Bleaching moves downward from ball
- UP Bleaching moves upward from base

7. References

Health Canada. 1979. Hardness - Technical Document, February 1979 (reprinted 1995). Available at: <http://www.hc-sc.gc.ca>.

Health Canada. 2020. 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: September 2020).

Appendices

Appendix A

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

February 1, 2021

Water System Operators

Re: Metals in Drinking Water – “Flush” Message in Annual Reports

Fraser Health has recently revised its metals at the tap “Flush” message and we are asking all water systems to please include the following health message with your next annual reports to your users.

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.

Sincerely,

Drinking Water Program
Fraser Health Authority
HPLand@fraserhealth.ca

Appendix B

Sample Range Report (Fraser Health Authority)

Sample Range Report

Fraser Health Authority

Facility Name: Clearbrook Waterworks District

Date Range: Jan 1 2020 to Dec 31 2020

Operator

Sampling Site	Date Collected	Total Coliform	E. Coli	Fecal Coliform
<u>RW 3-93, Lynden St</u>				
	3-2-2020 8:05:00 AM	LT1	LT1	
	7-6-2020 8:23:00 AM	LT1	LT1	
	10-27-2020 8:37:00 AM	<u>LT1</u>	<u>LT1</u>	
	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:	3		

Comments:

Environmental Health Officer

Jan 28 2021

FOR FURTHER INFORMATION PLEASE CALL: Barb Haworth

Sample Range Report

Fraser Health Authority

Facility Name: Clearbrook Waterworks District

Date Range: Jan 1 2020 to Dec 31 2020

Operator

Sampling Site	Date Collected	Total Coliform	E. Coli	Fecal Coliform
<u>Well RW 7 - 00/13,</u>				
<u>Lynden St</u>				
	2-6-2020 10:10:00 AM	LT1	LT1	
	8-4-2020 8:30:00 AM	LT1	LT1	
	11-30-2020 8:27:00 AM	<u>LT1</u>	<u>LT1</u>	
	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:	3	

Comments:

Environmental Health Officer

Jan 28 2021

FOR FURTHER INFORMATION PLEASE CALL: Barb Haworth

Sample Range Report

Fraser Health Authority

Facility Name: Clearbrook Waterworks District

Date Range: Jan 1 2020 to Dec 31 2020

Operator

Sampling Site	Date Collected	Total Coliform	E. Coli	Fecal Coliform
<u>RW 1-87-14, Autumn Ave</u>	1-6-2020	L1	L1	
	5-4-2020 9:07:00 AM	LT1	LT1	
	9-8-2020 8:47:00 AM	<u>LT1</u>	<u>LT1</u>	
	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:	3	

Comments:

Environmental Health Officer

Jan 28 2021

FOR FURTHER INFORMATION PLEASE CALL: Barb Haworth

Sample Range Report

Fraser Health Authority

Facility Name: Clearbrook Waterworks District

Date Range: Jan 1 2020 to Dec 31 2020

Operator

Sampling Site	Date Collected	Total Coliform	E. Coli	Fecal Coliform
<u>Well RW 2 - 63 ,</u>				
<u>Autumn Ave</u>				
	2-3-2020 7:33:00 AM	LT1	LT1	
	6-8-2020 7:53:00 AM	LT1	LT1	
	9-28-2020 9:27:00 AM	<u>LT1</u>	<u>LT1</u>	
	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:	3		

Comments:

Environmental Health Officer

Jan 28 2021

FOR FURTHER INFORMATION PLEASE CALL: Barb Haworth

Sample Range Report

Fraser Health Authority

Facility Name: Clearbrook Waterworks District

Date Range: Jan 1 2020 to Dec 31 2020

Operator

Sampling Site	Date Collected	Total Coliform	E. Coli	Fecal Coliform
<u>2580 Langdon St -</u>				
<u>East end of</u>				
<u>driveway, 2580</u>				
<u>Langdon St - East</u>				
<u>end of driveway</u>				
	1-20-2020	L1	L1	
	2-24-2020 7:53:00 AM	LT1	LT1	
	3-23-2020 8:57:00 AM	LT1	LT1	
	4-27-2020 8:17:00 AM	LT1	LT1	
	6-1-2020 9:52:00 AM	LT1	LT1	
	6-29-2020 10:17:00 AM	LT1	LT1	
	8-4-2020 8:40:00 AM	LT1	LT1	
	9-28-2020 9:11:00 AM	LT1	LT1	
	11-2-2020 8:46:00 AM	LT1	LT1	
	12-7-2020 8:15:00 AM	<u>LT1</u>	<u>LT1</u>	
	Total Positive:	0	0	0
<u>2889 Upland Cres.</u>				
<u>2889 Upland Cres</u>				
	1-6-2020	L1	L1	
	2-18-2020 9:06:00 AM	LT1	LT1	
	5-12-2020 7:52:00 AM	LT1	LT1	
	6-22-2020 7:08:00 AM	LT1	LT1	
	8-4-2020 8:11:00 AM	LT1	LT1	
	9-14-2020 8:36:00 AM	LT1	LT1	
	10-19-2020 8:34:00 AM	LT1	LT1	

11-30-2020 9:39:00 AM	<u>LT1</u>	<u>LT1</u>	
Total Positive:	0	0	0

2564 Clearbrook Rd.
(Office), 2564
Clearbrook Road

1-14-2020	L1	L1	
2-10-2020 8:55:00 AM	LT1	LT1	
3-16-2020 11:55:00 AM	LT1	LT1	
4-20-2020 8:51:00 AM	LT1	LT1	
5-25-2020 8:43:00 AM	LT1	LT1	
6-22-2020 8:30:00 AM	LT1	LT1	
7-27-2020 9:13:00 AM	LT1	LT1	
8-31-2020 8:24:00 AM	LT1	LT1	
10-27-2020 8:20:00 AM	LT1	LT1	
11-30-2020 9:16:00 AM	<u>LT1</u>	<u>LT1</u>	
Total Positive:	0	0	0

2743 Moorland St.
2743 Moorland St

2-10-2020 9:15:00 AM	LT1	LT1	
3-23-2020 8:23:00 AM	LT1	LT1	
5-4-2020 10:35:00 AM	LT1	LT1	
6-15-2020 9:29:00 AM	LT1	LT1	
7-27-2020 8:35:00 AM	LT1	LT1	
9-8-2020 8:38:00 AM	LT1	LT1	
10-13-2020 8:05:00 AM	LT1	LT1	
11-23-2020 9:15:00 AM	<u>LT1</u>	<u>LT1</u>	
Total Positive:	0	0	0

32171 South Fraser
Way (Petro
Canada), 32171
South Fraser Way
(Petro Canada)

1-27-2020 9:09:00 AM	LT1	LT1	
3-9-2020 8:39:00 AM	LT1	LT1	
4-6-2020 10:32:00 AM	LT1	LT1	
5-4-2020 10:44:00 AM	LT1	LT1	
6-15-2020 9:02:00 AM	LT1	LT1	
7-13-2020 8:13:00 AM	LT1	LT1	
8-10-2020 11:45:00 AM	LT1	LT1	
9-8-2020 9:00:00 AM	LT1	LT1	
9-14-2020 9:27:00 AM	LT1	LT1	
10-13-2020 8:26:00 AM	LT1	LT1	
11-9-2020 8:31:00 AM	LT1	LT1	
12-14-2020 9:08:00 AM	<u>REJCT DELAY3</u>	<u>REJCT DELAY3</u>	
Total Positive:	0	0	0

31419 Springhill
Court, 31419
Springhill Court

1-27-2020 9:28:00 AM	LT1	LT1	
2-24-2020 7:41:00 AM	LT1	LT1	
4-6-2020 9:06:00 AM	LT1	LT1	
5-19-2020 7:36:00 AM	LT1	LT1	
6-29-2020 9:56:00 AM	LT1	LT1	
8-10-2020 11:24:00 AM	LT1	LT1	
9-21-2020 8:26:00 AM	QRWRT	QRWRT	
10-27-2020 8:00:00 AM	LT1	LT1	
12-7-2020 8:03:00 AM	<u>LT1</u>	<u>LT1</u>	
Total Positive:	0	0	0

3089 Claudia Court,
3089 Claudia Court

1-6-2020	L1	L1	
2-3-2020 8:02:00 AM	LT1	LT1	

3-9-2020 8:20:00 AM	LT1	LT1	
4-14-2020 8:38:00 AM	LT1	LT1	
5-12-2020 7:57:00 AM	2	LT1	
6-15-2020 8:53:00 AM	LT1	LT1	
7-21-2020 8:36:00 AM	LT1	LT1	
8-18-2020 8:29:00 AM	LT1	LT1	
9-21-2020 8:48:00 AM	QRWRT	QRWRT	
10-19-2020 8:42:00 AM	LT1	LT1	
11-16-2020 8:05:00 AM	<u>LT1</u>	<u>LT1</u>	
Total Positive:	1	0	0

31898 Royal
Crescent, 31898
Royal Crescent

2-3-2020 9:08:00 AM	LT1	LT1	
3-2-2020 8:23:00 AM	LT1	LT1	
4-6-2020 9:18:00 AM	LT1	LT1	
5-12-2020 8:03:00 AM	LT1	LT1	
6-8-2020 7:38:00 AM	LT1	LT1	
7-13-2020 8:05:00 AM	LT1	LT1	
8-18-2020 9:37:00 AM	LT1	LT1	
9-14-2020 9:34:00 AM	LT1	LT1	
10-13-2020 8:16:00 AM	LT1	LT1	
11-16-2020 8:12:00 AM	LT1	LT1	
12-14-2020 8:50:00 AM	<u>REJCT DELAY3</u>	<u>REJCT DELAY3</u>	
Total Positive:	0	0	0

31894 Duchess Ave.
31894 Duchess Ave

1-20-2020	L1	L1	
2-18-2020 9:18:00 AM	LT1	LT1	
3-23-2020 8:40:00 AM	LT1	LT1	

4-27-2020 8:30:00 AM	LT1	LT1	
5-25-2020 8:22:00 AM	LT1	LT1	
6-29-2020 10:09:00 AM	LT1	LT1	
8-4-2020 8:51:00 AM	LT1	LT1	
8-31-2020 8:36:00 AM	LT1	LT1	
9-28-2020 9:02:00 AM	LT1	LT1	
11-2-2020 8:28:00 AM	LT1	LT1	
11-30-2020 9:32:00 AM	<u>LT1</u>	<u>LT1</u>	
Total Positive:	0	0	0

2749 Braeside
Street, 2749
Braeside Street

2-3-2020 7:46:00 AM	LT1	LT1	
3-2-2020 8:32:00 AM	LT1	LT1	
4-14-2020 8:26:00 AM	LT1	LT1	
5-25-2020 8:15:00 AM	LT1	LT1	
7-6-2020 8:50:00 AM	LT1	LT1	
8-18-2020 8:21:00 AM	LT1	LT1	
11-2-2020 8:21:00 AM	LT1	LT1	
12-14-2020 9:00:00 AM	<u>REJCT DELAY3</u>	<u>REJCT DELAY3</u>	
Total Positive:	0	0	0

32073 Mt
Waddington Ave.,
32073 Mt
Waddington Ave

1-20-2020	L1	L1	
2-24-2020 8:18:00 AM	LT1	LT1	
3-30-2020 8:30:00 AM	LT1	LT1	
4-27-2020 8:24:00 AM	LT1	LT1	
6-1-2020 9:45:00 AM	LT1	LT1	
7-6-2020 8:41:00 AM	LT1	LT1	

8-4-2020 9:00:00 AM	LT1	LT1	
10-5-2020 8:56:00 AM	LT1	LT1	
11-2-2020 8:37:00 AM	LT1	LT1	
12-7-2020 8:25:00 AM	<u>LT1</u>	<u>LT1</u>	
Total Positive:	0	0	0

2903 Palm Crescent.
2903 Palm Crescent

1-27-2020 9:18:00 AM	LT1	LT1	
2-24-2020 8:07:00 AM	LT1	LT1	
3-30-2020 8:40:00 AM	LT1	LT1	
5-4-2020 10:22:00 AM	LT1	LT1	
6-1-2020 9:24:00 AM	LT1	LT1	
7-6-2020 8:13:00 AM	LT1	LT1	
8-10-2020 11:14:00 AM	LT1	LT1	
9-8-2020 8:25:00 AM	LT1	LT1	
10-5-2020 8:29:00 AM	LT1	LT1	
11-9-2020 8:18:00 AM	LT1	LT1	
12-7-2020 7:55:00 AM	<u>LT1</u>	<u>LT1</u>	
Total Positive:	0	0	0

32350 Diamond
Cres, 32350
Diamond Cres

1-14-2020	L1	L1	
2-10-2020 9:33:00 AM	LT1	LT1	
3-16-2020 12:15:00 PM	LT1	LT1	
4-20-2020 9:15:00 AM	LT1	LT1	
5-19-2020 8:16:00 AM	LT1	LT1	
6-22-2020 8:36:00 AM	LT1	LT1	
7-27-2020 9:25:00 AM	LT1	LT1	
8-24-2020 7:47:00 AM	LT1	LT1	

10-27-2020 8:47:00 AM	LT1	LT1	
11-23-2020 9:33:00 AM	<u>LT1</u>	<u>LT1</u>	
Total Positive:	0	0	0

2940 Clearbrook
Rd.(Bible Col), 2940
Clearbrook Road

1-6-2020	L1	L1	
2-10-2020 9:26:00 AM	LT1	LT1	
3-16-2020 12:07:00 PM	LT1	LT1	
4-14-2020 8:48:00 AM	LT1	LT1	
5-19-2020 8:07:00 AM	LT1	LT1	
6-22-2020 8:27:00 AM	LT1	LT1	
7-21-2020 8:45:00 AM	LT1	LT1	
8-24-2020 7:56:00 AM	LT1	LT1	
10-19-2020 8:50:00 AM	LT1	LT1	
11-23-2020 9:25:00 AM	<u>LT1</u>	<u>LT1</u>	
Total Positive:	0	0	0

2464 Sunnyside
Place, 2464
Sunnyside Place

1-14-2020	L1	L1	
3-16-2020 11:43:00 AM	LT1	LT1	
4-27-2020 8:37:00 AM	LT1	LT1	
6-8-2020 7:30:00 AM	LT1	LT1	
7-21-2020 7:35:00 AM	LT1	LT1	
8-31-2020 8:04:00 AM	LT1	LT1	
10-5-2020 8:37:00 AM	LT1	LT1	
11-16-2020 7:56:00 AM	<u>LT1</u>	<u>LT1</u>	
Total Positive:	0	0	0

Reservoir C (1985),
2886 Grandview
Cres

2-3-2020 8:26:00 AM	LT1	LT1	
4-6-2020 8:56:00 AM	LT1	LT1	
6-8-2020 7:21:00 AM	LT1	LT1	
8-4-2020 8:05:00 AM	LT1	LT1	
9-28-2020 8:37:00 AM	LT1	LT1	
10-27-2020 7:52:00 AM	LT1	LT1	
11-30-2020 8:44:00 AM	<u>LT1</u>	<u>LT1</u>	
Total Positive:	0	0	0

2664 Albert Way.
2664 Albert Way

1-20-2020	L1	L1	
3-9-2020 8:02:00 AM	LT1	LT1	
4-20-2020 9:36:00 AM	LT1	LT1	
6-1-2020 9:33:00 AM	LT1	LT1	
7-13-2020 7:56:00 AM	REJCT LKS2	REJCT LKS2	
8-24-2020 8:19:00 AM	LT1	LT1	
9-28-2020 8:48:00 AM	LT1	LT1	
11-9-2020 8:23:00 AM	<u>LT1</u>	<u>LT1</u>	
Total Positive:	0	0	0

2459 Centre Street
(at United Rentals).
2459 Centre Street
(at United Rentals)

1-6-2020	L1	L1	
2-18-2020 8:36:00 AM	LT1	LT1	
3-9-2020 8:11:00 AM	LT1	LT1	
4-14-2020 8:56:00 AM	LT1	LT1	
5-19-2020 7:56:00 AM	LT1	LT1	
6-15-2020 8:40:00 AM	LT1	LT1	
7-21-2020 7:45:00 AM	LT1	LT1	
8-24-2020 8:12:00 AM	LT1	LT1	

9-21-2020 8:37:00 AM	QRWRT	QRWRT	
10-19-2020 8:59:00 AM	LT1	LT1	
11-23-2020 8:43:00 AM	<u>LT1</u>	<u>LT1</u>	
Total Positive:	0	0	0

2577 Victoria Street,
2577 Victoria St

1-14-2020	L1	L1	
2-18-2020 8:52:00 AM	LT1	LT1	
3-23-2020 8:33:00 AM	LT1	LT1	
4-20-2020 8:58:00 AM	LT1	LT1	
5-25-2020 8:30:00 AM	LT1	LT1	
6-29-2020 10:04:00 AM	LT1	LT1	
7-27-2020 8:45:00 AM	LT1	LT1	
8-31-2020 8:13:00 AM	LT1	LT1	
9-28-2020 8:56:00 AM	LT1	LT1	
10-27-2020 8:10:00 AM	LT1	LT1	
11-30-2020 9:25:00 AM	<u>LT1</u>	<u>LT1</u>	
Total Positive:	0	0	0

Reservoir B (1970),
2886 Grandview
Cres

1-6-2020	L1	L1	
3-2-2020 7:44:00 AM	LT1	LT1	
5-4-2020 8:17:00 AM	LT1	LT1	
7-6-2020 8:58:00 AM	LT1	LT1	
9-8-2020 8:35:00 AM	<u>LT1</u>	<u>LT1</u>	
Total Positive:	0	0	0

32138 George
Ferguson Way,
32138 George
Ferguson Way

2-3-2020 8:16:00 AM	LT1	LT1	
------------------------	-----	-----	--

3-2-2020 8:41:00 AM	LT1	LT1	
4-6-2020 10:40:00 AM	LT1	LT1	
5-12-2020 8:08:00 AM	LT1	LT1	
6-8-2020 7:44:00 AM	LT1	LT1	
7-13-2020 8:22:00 AM	LT1	LT1	
8-18-2020 8:46:00 AM	LT1	LT1	
9-21-2020 8:55:00 AM	QRWRT	QRWRT	
10-13-2020 8:35:00 AM	LT1	LT1	
11-16-2020 8:20:00 AM	<u>LT1</u>	<u>LT1</u>	
Total Positive:	0	0	0

2425 Lynden Street,
2425 Lynden Street

1-27-2020 9:01:00 AM	LT1	LT1	
3-2-2020 8:12:00 AM	LT1	LT1	
3-30-2020 9:03:00 AM	OIE	OIE	
3-30-2020 9:03:00 AM	LT1	LT1	
5-4-2020 8:33:00 AM	LT1	LT1	
6-8-2020 7:59:00 AM	LT1	LT1	
7-6-2020 8:31:00 AM	LT1	LT1	
8-10-2020 11:37:00 AM	LT1	LT1	
9-8-2020 8:53:00 AM	LT1	LT1	
9-14-2020 9:18:00 AM	LT1	LT1	
10-5-2020 8:47:00 AM	LT1	LT1	
11-9-2020 8:37:00 AM	LT1	LT1	
12-14-2020 9:16:00 AM	<u>REJCT DELAY3</u>	<u>REJCT DELAY3</u>	
Total Positive:	0	0	0

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

Samples that contain total coliform:	1	0.47% 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:	212	

Comments:

Environmental Health Officer
Jan 28 2021

FOR FURTHER INFORMATION PLEASE CALL: Barb Haworth

MEMORANDUM

To: Environmental Health Units/ Health Protection Branches, BC Health Authorities
From: Environmental Microbiology, BC Centre for Disease Control Public Health Laboratory
(BCCDC PHL)
Date: 11/28/2019
Re: Important Information for Environmental Microbiology Water Bacteriology Reporting

The BCCDC PHL Environmental Microbiology laboratory information system is undergoing significant upgrades to a more sustainable, reliable platform. The date of the transition is occurring in early 2020 and all Health Authorities will be notified with at least one weeks' notice.

To assist for a smooth transition, please be informed of the following, to minimize delays in report delivery:

1. Health Authority-contracted vendor electronic transmission and reporting:
 - a. Printed requisitions with designated sampling collection sites (and associated barcodes), **cannot** be manually manipulated or re-written, re-used, and/ or expired.
 - b. Sampling collection sites must always be input electronically, with:
 - i. Requisition ID and/or
 - ii. Client ID -Sampling Point Locator
 - c. Collections with no associated barcodes and no electronic input will not properly interface, and will result in 'Orphaned' and/or missing reports.
2. All reports from BCCDC PHL Environmental Microbiology are concurrently available for through Excelleris LaunchPad. To register as a client for Excelleris LaunchPad, please contact:

LaunchPad BC Support
604-658-2121 (Monday to Friday 8:00am – 5:00pm PST)
1-866-728-4777 (Monday to Friday 8:00am – 5:00pm PST)
Fax: 604-291-6837
support@excelleris.com

3. For your convenience, please note the following code changes for common codified results and report comments. These translations will also be available in water bacteriology reports.

Reporting Result	Previous Code	Future Code
Less than 1	L1	LT1
Greater than 200.5	N/A	GR200
Greater than 2149.2	N/A	GR241
Estimated count	EST	ESTCT
High colony density on membrane prevented accurate coliform count.	N/A	ESTHCD
Greater than 200 background colonies on membrane filter per 100 ml of sample.	N/A	GTR200
Overgrown	N/A	OGO
Overgrown with coliform present.	N/A	OGCOL
Overgrown with <i>E. coli</i> present.	N/A	OGECOL
Result indicates confluent bacterial growth preventing accurate coliform determination. Re sample for MPN testing by indicating Previous Sample Overgrown.	N/A	OGC
No green pigment noted in lauryl tryptose broth cultures	N/A	NGPRI
<i>Pseudomonas aeruginosa</i> detected by enzyme substrate method. This method is under evaluation and may be more sensitive.	N/A	PSESP
Preliminary report	N/A	PRELIM
Final report	N/A	FINRPT
Sample exceeded 30 hours from time of collection, results may not be valid. No written report will be issued and only a qualitative result will be reported by telephone when test is completed.	N/A	QRWRT
Specimen rejected	N/A	REJCT
Sample not tested too long in transit	N/A	DELAY3

For further information and troubleshooting, please contact your Health Authority contracted reporting vendor and/or BCCDC PHL Environmental Microbiology at 604-707-2620 or BCCDCPHLEnvMicroLab@bccdc.ca. Thank you.

Appendix C

Water Quality Reports – Routine Water Quality Analysis

Report Transmission Cover Page

Bill To: Clearbrook Waterworks District
2564 Clearbrook Road
Abbotsford, BC, Canada
V2T 2Y5
Attn: Accounts Payable
Sampled By: Ryan Fedeau
Company:

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

Lot ID: **1435027**
Control Number:
Date Received: Jul 16, 2020
Date Reported: Jul 22, 2020
Report Number: 2531234

Contact	Company	Address
Accounts Payable	Clearbrook Waterworks District	2564 Clearbrook Road Abbotsford, BC V2T 2Y5 Phone: (604) 850-6621 Fax: (604) 850-7862 Email: office@clearbrookwaterworks.com

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Contact	Company	Address
Ineke Kalwij	Kalwij Water Dynamics Inc	P.O. Box 684 Station Main Port Coquitlam, BC V3B 6H9 Phone: (604) 475-4063 Fax: (604) 475-4062 Email: ineke@kalwijwaterdynamics.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	PDF	COR

Contact	Company	Address
Ryan Federau	Clearbrook Waterworks District	2564 Clearbrook Road Abbotsford, BC V2T 2Y5 Phone: (604) 309-3986 Fax: (604) 850-7862 Email: ryan@clearbrookwaterworks.com

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

Notes To Clients:

- Jul 20, 2020 - Sample 1435027-2; 7131975: Reduction of analytical volume was necessary for chloride analysis to bring results within the analytical range for sample 1435027-2. Detection limits are adjusted accordingly.
- Jul 20, 2020 - Sample 1435027-3; 7131976: Reduction of analytical volume was necessary for chloride analysis to bring results within the analytical range for sample 1435027-3. Detection limits are adjusted accordingly.
- Jul 22, 2020 - The analysis of water sample 1435027-1 to 1435027-5 is below Maximum Acceptable Concentrations for the chemical and bacteriological health related guidelines specified by the June 2019 Guidelines for Canadian Drinking Water Quality for the parameters tested.

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Analytical Report

Bill To: Clearbrook Waterworks District 2564 Clearbrook Road Abbotsford, BC, Canada V2T 2Y5	Project ID: Project Name: Project Location: LSD: P.O.:	Lot ID: 1435027 Control Number: Date Received: Jul 16, 2020 Date Reported: Jul 22, 2020 Report Number: 2531234
Attn: Accounts Payable Sampled By: Ryan Fedeau Company:	Proj. Acct. code:	

Reference Number	1435027-1
Sample Date	July 16, 2020
Sample Time	09:48
Sample Location	
Sample Description	RW 2-63/17 / 8.9 °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	Below OG	
Antimony	Extractable mg/L	0.00011	0.00002	0.006	Below MAC	
Arsenic	Extractable mg/L	0.0008	0.0001	0.010	Below MAC	
Barium	Extractable mg/L	0.013	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	0.005	Below MAC	
Chromium	Extractable mg/L	0.00007	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	0.0006	0.0002	0.05	Below MAC	
Strontium	Extractable mg/L	0.092	0.0001	7.0	Below MAC	
Uranium	Extractable mg/L	0.00011	0.00001	0.02	Below MAC	
Vanadium	Extractable mg/L	0.00006	0.00005			
Zinc	Extractable mg/L	0.0012	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	0.49	0.1	0.1	Above OG
Routine Water						
pH - Holding Time			Exceeded			
pH	at 25 °C		7.60	0.01	7.0-10.5	Within Range
Electrical Conductivity		µS/cm at 25 °C	258	1		
Calcium	Extractable	mg/L	27	0.01		
Iron	Extractable	mg/L	<0.004	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	6.6	0.02		
Manganese	Extractable	mg/L	0.011	0.001	0.02 AO; 0.12 MAC	Below AO
Potassium	Extractable	mg/L	1.8	0.04		
Silicon	Extractable	mg/L	8.1	0.005		
Sodium	Extractable	mg/L	9.2	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	78	5		
Chloride	Dissolved	mg/L	16.3	0.05	250	Below AO
Fluoride	Dissolved	mg/L	<0.01	0.01	1.5	Below MAC
Nitrate - N	Dissolved	mg/L	1.06	0.01	10	Below MAC

Analytical Report

Bill To: Clearbrook Waterworks District	Project ID:	Lot ID: 1435027
2564 Clearbrook Road	Project Name:	Control Number:
Abbotsford, BC, Canada	Project Location:	Date Received: Jul 16, 2020
V2T 2Y5	LSD:	Date Reported: Jul 22, 2020
Attn: Accounts Payable	P.O.:	Report Number: 2531234
Sampled By: Ryan Fedeau	Proj. Acct. code:	
Company:		

Reference Number	1435027-1
Sample Date	July 16, 2020
Sample Time	09:48
Sample Location	
Sample Description	RW 2-63/17 / 8.9 °C
Sample Matrix	Drinking Water

Analyte	Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments	
Routine Water - Continued						
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	94	1		
Total Dissolved Solids	Extractable	mg/L	155	1	500	Below AO

Analytical Report

Bill To: Clearbrook Waterworks District
2564 Clearbrook Road
Abbotsford, BC, Canada
V2T 2Y5
Attn: Accounts Payable
Sampled By: Ryan Fedeau
Company:

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

Lot ID: **1435027**
Control Number:
Date Received: Jul 16, 2020
Date Reported: Jul 22, 2020
Report Number: 2531234

Reference Number 1435027-2
Sample Date July 16, 2020
Sample Time 10:05
Sample Location
Sample Description RW 3-93/11 / 8.9 °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	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	0.0080	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	0.005	Below MAC
Chromium	Extractable	mg/L	0.00012	0.00005	0.05	Below MAC
Copper	Extractable	mg/L	0.0009	0.0005	1 AO; 2 MAC	Below AO
Lead	Extractable	mg/L	0.00015	0.00001	0.005	Below MAC
Selenium	Extractable	mg/L	0.0004	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	0.00011	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	0.16	0.1	0.1	Above OG
Routine Water						
pH - Holding Time			Exceeded			
pH	at 25 °C		7.21	0.01	7.0-10.5	Within Range
Electrical Conductivity		µS/cm at 25 °C	318	1		
Calcium	Extractable	mg/L	31	0.01		
Iron	Extractable	mg/L	0.009	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	7.5	0.02		
Manganese	Extractable	mg/L	0.002	0.001	0.02 AO; 0.12 MAC	Below AO
Potassium	Extractable	mg/L	1.6	0.04		
Silicon	Extractable	mg/L	10.0	0.005		
Sodium	Extractable	mg/L	10	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	58	5		
Chloride	Dissolved	mg/L	44.5	0.05	250	Below AO
Fluoride	Dissolved	mg/L	<0.01	0.01	1.5	Below MAC
Nitrate - N	Dissolved	mg/L	1.74	0.01	10	Below MAC

Analytical Report

Bill To: Clearbrook Waterworks District	Project ID:	Lot ID: 1435027
2564 Clearbrook Road	Project Name:	Control Number:
Abbotsford, BC, Canada	Project Location:	Date Received: Jul 16, 2020
V2T 2Y5	LSD:	Date Reported: Jul 22, 2020
Attn: Accounts Payable	P.O.:	Report Number: 2531234
Sampled By: Ryan Fedeau	Proj. Acct. code:	
Company:		

Reference Number	1435027-2
Sample Date	July 16, 2020
Sample Time	10:05
Sample Location	
Sample Description	RW 3-93/11 / 8.9 °C
Sample Matrix	Drinking Water

Analyte	Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water - Continued					
Nitrite - N	Dissolved mg/L	<0.01	0.01	1	Below MAC
Sulfate (SO4)	Dissolved mg/L	19.2	0.1	500	Below AO
Hardness	as CaCO3 (extractable) mg/L	108	1		
Total Dissolved Solids	Extractable mg/L	183	1	500	Below AO

Analytical Report

Bill To: Clearbrook Waterworks District
2564 Clearbrook Road
Abbotsford, BC, Canada
V2T 2Y5
Attn: Accounts Payable
Sampled By: Ryan Fedeau
Company:

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

Lot ID: **1435027**
Control Number:
Date Received: Jul 16, 2020
Date Reported: Jul 22, 2020
Report Number: 2531234

Reference Number 1435027-3
Sample Date July 16, 2020
Sample Time 10:19
Sample Location
Sample Description RW 7-00/13 / 8.9 °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	Below OG	
Antimony	Extractable mg/L	0.00003	0.00002	0.006	Below MAC	
Arsenic	Extractable mg/L	0.0003	0.0001	0.010	Below MAC	
Barium	Extractable mg/L	0.0061	0.0001	2.0	Below MAC	
Boron	Extractable mg/L	0.012	0.002	5	Below MAC	
Cadmium	Extractable mg/L	0.00002	0.00001	0.005	Below MAC	
Chromium	Extractable mg/L	0.00020	0.00005	0.05	Below MAC	
Copper	Extractable mg/L	0.0026	0.0005	1 AO; 2 MAC	Below AO	
Lead	Extractable mg/L	0.00025	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	0.00021	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	0.12	0.1	0.1	Above OG
Routine Water						
pH - Holding Time			Exceeded			
pH	at 25 °C		7.16	0.01	7.0-10.5	Within Range
Electrical Conductivity		µS/cm at 25 °C	239	1		
Calcium	Extractable	mg/L	23	0.01		
Iron	Extractable	mg/L	<0.004	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	5.6	0.02		
Manganese	Extractable	mg/L	0.001	0.001	0.02 AO; 0.12 MAC	Below AO
Potassium	Extractable	mg/L	1.2	0.04		
Silicon	Extractable	mg/L	9.9	0.005		
Sodium	Extractable	mg/L	7.5	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	41	5		
Chloride	Dissolved	mg/L	30.8	0.05	250	Below AO
Fluoride	Dissolved	mg/L	<0.01	0.01	1.5	Below MAC
Nitrate - N	Dissolved	mg/L	2.50	0.01	10	Below MAC

Analytical Report

Bill To: Clearbrook Waterworks District	Project ID:	Lot ID: 1435027
2564 Clearbrook Road	Project Name:	Control Number:
Abbotsford, BC, Canada	Project Location:	Date Received: Jul 16, 2020
V2T 2Y5	LSD:	Date Reported: Jul 22, 2020
Attn: Accounts Payable	P.O.:	Report Number: 2531234
Sampled By: Ryan Fedeau	Proj. Acct. code:	
Company:		

Reference Number	1435027-3
Sample Date	July 16, 2020
Sample Time	10:19
Sample Location	
Sample Description	RW 7-00/13 / 8.9 °C
Sample Matrix	Drinking Water

Analyte	Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water - Continued					
Nitrite - N	Dissolved mg/L	<0.01	0.01	1	Below MAC
Sulfate (SO4)	Dissolved mg/L	13.6	0.1	500	Below AO
Hardness	as CaCO3 (extractable) mg/L	81	1		
Total Dissolved Solids	Extractable mg/L	145	1	500	Below AO

Analytical Report

Bill To: Clearbrook Waterworks District
2564 Clearbrook Road
Abbotsford, BC, Canada
V2T 2Y5
Attn: Accounts Payable
Sampled By: Ryan Fedeau
Company:

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

Lot ID: **1435027**
Control Number:
Date Received: Jul 16, 2020
Date Reported: Jul 22, 2020
Report Number: 2531234

Reference Number 1435027-4
Sample Date July 16, 2020
Sample Time 10:37
Sample Location
Sample Description RW 1-87/14 / 8.9 °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	Below OG
Antimony	Extractable	mg/L	0.00010	0.00002	0.006	Below MAC
Arsenic	Extractable	mg/L	0.0016	0.0001	0.010	Below MAC
Barium	Extractable	mg/L	0.023	0.0001	2.0	Below MAC
Boron	Extractable	mg/L	0.033	0.002	5	Below MAC
Cadmium	Extractable	mg/L	0.00001	0.00001	0.005	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	0.10	0.0001	7.0	Below MAC
Uranium	Extractable	mg/L	0.00038	0.00001	0.02	Below MAC
Vanadium	Extractable	mg/L	0.00019	0.00005		
Zinc	Extractable	mg/L	0.0006	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	0.22	0.1	0.1	Above OG
Routine Water						
pH - Holding Time			Exceeded			
pH	at 25 °C		7.82	0.01	7.0-10.5	Within Range
Electrical Conductivity		µS/cm at 25 °C	327	1		
Calcium	Extractable	mg/L	33	0.01		
Iron	Extractable	mg/L	0.010	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	8.8	0.02		
Manganese	Extractable	mg/L	0.055	0.001	0.02 AO; 0.12 MAC	Above AO
Potassium	Extractable	mg/L	2.8	0.04		
Silicon	Extractable	mg/L	7.0	0.005		
Sodium	Extractable	mg/L	16	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	129	5		
Chloride	Dissolved	mg/L	12.3	0.05	250	Below AO
Fluoride	Dissolved	mg/L	<0.01	0.01	1.5	Below MAC
Nitrate - N	Dissolved	mg/L	0.02	0.01	10	Below MAC

Analytical Report

Bill To: Clearbrook Waterworks District	Project ID:	Lot ID: 1435027
2564 Clearbrook Road	Project Name:	Control Number:
Abbotsford, BC, Canada	Project Location:	Date Received: Jul 16, 2020
V2T 2Y5	LSD:	Date Reported: Jul 22, 2020
Attn: Accounts Payable	P.O.:	Report Number: 2531234
Sampled By: Ryan Fedeau	Proj. Acct. code:	
Company:		

Reference Number	1435027-4
Sample Date	July 16, 2020
Sample Time	10:37
Sample Location	
Sample Description	RW 1-87/14 / 8.9 °C
Sample Matrix	Drinking Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water - Continued						
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	119	1		
Total Dissolved Solids	Extractable	mg/L	191	1	500	Below AO

Analytical Report

Bill To: Clearbrook Waterworks District 2564 Clearbrook Road Abbotsford, BC, Canada V2T 2Y5	Project ID: Project Name: Project Location: LSD: P.O.:	Lot ID: 1435027 Control Number: Date Received: Jul 16, 2020 Date Reported: Jul 22, 2020 Report Number: 2531234
Attn: Accounts Payable Sampled By: Ryan Fedeau Company:	Proj. Acct. code:	

Reference Number	1435027-5
Sample Date	July 16, 2020
Sample Time	10:48
Sample Location	
Sample Description	Reservoir C / 8.9 °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	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	0.012	0.0001	2.0	Below MAC	
Boron	Extractable mg/L	0.017	0.002	5	Below MAC	
Cadmium	Extractable mg/L	<0.00001	0.00001	0.005	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	0.00002	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	0.00009	0.00001	0.02	Below MAC	
Vanadium	Extractable mg/L	0.00016	0.00005			
Zinc	Extractable mg/L	0.0006	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	Above OG
Routine Water						
pH - Holding Time			Exceeded			
pH	at 25 °C		7.59	0.01	7.0-10.5	Within Range
Electrical Conductivity		µS/cm at 25 °C	264	1		
Calcium	Extractable	mg/L	27	0.01		
Iron	Extractable	mg/L	<0.004	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	6.4	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	8.9	0.005		
Sodium	Extractable	mg/L	9.0	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	71	5		
Chloride	Dissolved	mg/L	22.1	0.05	250	Below AO
Fluoride	Dissolved	mg/L	<0.01	0.01	1.5	Below MAC
Nitrate - N	Dissolved	mg/L	1.45	0.01	10	Below MAC

Analytical Report

Bill To: Clearbrook Waterworks District	Project ID:	Lot ID: 1435027
2564 Clearbrook Road	Project Name:	Control Number:
Abbotsford, BC, Canada	Project Location:	Date Received: Jul 16, 2020
V2T 2Y5	LSD:	Date Reported: Jul 22, 2020
Attn: Accounts Payable	P.O.:	Report Number: 2531234
Sampled By: Ryan Fedeau	Proj. Acct. code:	
Company:		

Reference Number	1435027-5
Sample Date	July 16, 2020
Sample Time	10:48
Sample Location	
Sample Description	Reservoir C / 8.9 °C
Sample Matrix	Drinking Water

Analyte	Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments	
Routine Water - Continued						
Nitrite - N	Dissolved	mg/L	<0.01	0.01	1	Below MAC
Sulfate (SO4)	Dissolved	mg/L	18.9	0.1	500	Below AO
Hardness	as CaCO3 (extractable)	mg/L	94	1		
Total Dissolved Solids	Extractable	mg/L	158	1	500	Below AO

Approved by: 
 Max Hewitt
 Operations Manager

Methodology and Notes

Bill To: Clearbrook Waterworks District 2564 Clearbrook Road Abbotsford, BC, Canada V2T 2Y5	Project ID: Project Name: Project Location: LSD: P.O.:	Lot ID: 1435027 Control Number: Date Received: Jul 16, 2020 Date Reported: Jul 22, 2020 Report Number: 2531234
Attn: Accounts Payable Sampled By: Ryan Fedeau Company:	Proj. Acct. code:	

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 16, 2020	Element Vancouver
Alk, pH, EC, Turb in water (BC)	APHA	* Conductivity, 2510 B	Jul 16, 2020	Element Vancouver
Alk, pH, EC, Turb in water (BC)	APHA	* pH - Electrometric Method, 4500-H+ B	Jul 16, 2020	Element Vancouver
Anions by IEC in water (VAN)	APHA	* Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	Jul 17, 2020	Element Vancouver
Heterotrophic (Standard) Plate Count (Aerobic SP) - VAN	APHA	Enzyme Substrate Method, 9215 E	Jul 17, 2020	Element Vancouver
Metals SemiTrace (Extractable) in water (VAN)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	Jul 17, 2020	Element Vancouver
Metals SemiTrace (Extractable) in water (VAN)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	Jul 21, 2020	Element Vancouver
Total and E-Coli - Colilert - DW (VAN)	APHA	Enzyme Substrate Test, APHA 9223 B	Jul 17, 2020	Element Vancouver
Trace Metals (extractable) in Water (VAN)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Jul 17, 2020	Element Vancouver
True Color in water (VAN)	APHA	* Spectrophotometric - Single Wavelength Method, 2120 C	Jul 17, 2020	Element Vancouver
Turbidity - Water (VAN)	APHA	* Turbidity - Nephelometric Method, 2130 B	Jul 17, 2020	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, June 2019
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:

- Jul 20, 2020 - Sample 1435027-2; 7131975: Reduction of analytical volume was necessary for chloride analysis to bring results within the analytical range for sample 1435027-2. Detection limits are adjusted accordingly.
- Jul 20, 2020 - Sample 1435027-3; 7131976: Reduction of analytical volume was necessary for chloride analysis to bring results within the analytical range for sample 1435027-3. Detection limits are adjusted accordingly.
- Jul 22, 2020 - The analysis of water sample 1435027-1 to 1435027-5 is below Maximum Acceptable Concentrations for the chemical and bacteriological health related guidelines specified by the June 2019 Guidelines for Canadian Drinking Water Quality for the parameters tested.

Methodology and Notes

Bill To: Clearbrook Waterworks District	Project ID:	Lot ID: 1435027
2564 Clearbrook Road	Project Name:	Control Number:
Abbotsford, BC, Canada	Project Location:	Date Received: Jul 16, 2020
V2T 2Y5	LSD:	Date Reported: Jul 22, 2020
Attn: Accounts Payable	P.O.:	Report Number: 2531234
Sampled By: Ryan Fedeau	Proj. Acct. code:	
Company:		

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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Report Transmission Cover Page

Bill To: Clearbrook Waterworks District 2564 Clearbrook Road Abbotsford, BC, Canada V2T 2Y5	Project ID: Project Name: Project Location: LSD: P.O.:	Lot ID: 1467880 Control Number: C117929 Date Received: Jan 8, 2021 Date Reported: Jan 13, 2021 Report Number: 2585689
Attn: Accounts Payable	P.O.:	
Sampled By:	Proj. Acct. code:	
Company:		

Contact	Company	Address
Accounts Payable	Clearbrook Waterworks District	2564 Clearbrook Road Abbotsford, BC V2T 2Y5 Phone: (604) 850-6621 Fax: (604) 850-7862 Email: office@clearbrookwaterworks.com

Delivery	Format	Deliverables
Email - Single Report	PDF	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 Reports	PDF	COC / Test Report
Email - Single Report	PDF	COA

Contact	Company	Address
Ryan Federau	Clearbrook Waterworks District	2564 Clearbrook Road Abbotsford, BC V2T 2Y5 Phone: (604) 309-3986 Fax: (604) 850-7862 Email: ryan@clearbrookwaterworks.com

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

Notes To Clients:

- Jan 11, 2021 - Sample 1467880-4; 7343123: Reduction of analytical volume was necessary for chloride analysis to bring results within the analytical range for sample 1467880-4. Detection limits are adjusted accordingly.
- Jan 11, 2021 - Sample 1467880-5; 7343124: Reduction of analytical volume was necessary for chloride analysis to bring results within the analytical range for sample 1467880-5. Detection limits are adjusted accordingly.
- Jan 13, 2021 - The analysis of water sample 1467880-1 to -3, and 1467880-5 is below Maximum Acceptable Concentrations for the chemical and bacteriological health related guidelines specified by the September 2020 Guidelines for Canadian Drinking Water Quality for the parameters tested.
- Jan 13, 2021 - The Total Coliforms result in sample 1467880-4 exceeded the maximum acceptable concentration (MAC) as specified by the September 2020 Guidelines for Canadian Drinking Water Quality.

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Analytical Report

Bill To: Clearbrook Waterworks District 2564 Clearbrook Road Abbotsford, BC, Canada V2T 2Y5	Project ID: Project Name: Project Location: LSD: P.O.:	Lot ID: 1467880 Control Number: C117929 Date Received: Jan 8, 2021 Date Reported: Jan 13, 2021 Report Number: 2585689
Attn: Accounts Payable	Proj. Acct. code:	
Sampled By:		
Company:		

Reference Number	1467880-1
Sample Date	January 08, 2021
Sample Time	09:01
Sample Location	
Sample Description	Reservoir "C" / 8.5 °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	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	0.013	0.0001	2.0	Below MAC	
Boron	Extractable mg/L	0.017	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	<0.0005	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	0.00010	0.00001	0.02	Below MAC	
Vanadium	Extractable mg/L	0.00036	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	21.0	2		
Physical and Aggregate Properties						
Colour	True	Colour units	<5	5		
Turbidity		NTU	<0.10	0.1	0.1	Below OG
Routine Water						
pH - Holding Time			Exceeded			
pH	at 25 °C		7.36	0.01	7.0-10.5	Within Range
Electrical Conductivity		µS/cm at 25 °C	268	1		
Calcium	Extractable	mg/L	28	0.01		
Iron	Extractable	mg/L	0.006	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	6.9	0.02		
Manganese	Extractable	mg/L	0.005	0.001	0.02 AO; 0.12 MAC	Below AO
Potassium	Extractable	mg/L	1.7	0.04		
Silicon	Extractable	mg/L	9.1	0.005		
Sodium	Extractable	mg/L	10	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	69	5		
Chloride	Dissolved	mg/L	26.7	0.05	250	Below AO
Fluoride	Dissolved	mg/L	<0.01	0.01	1.5	Below MAC
Nitrate - N	Dissolved	mg/L	1.72	0.01	10	Below MAC

Analytical Report

Bill To: Clearbrook Waterworks District	Project ID:	Lot ID: 1467880
2564 Clearbrook Road	Project Name:	Control Number: C117929
Abbotsford, BC, Canada	Project Location:	Date Received: Jan 8, 2021
V2T 2Y5	LSD:	Date Reported: Jan 13, 2021
Attn: Accounts Payable	P.O.:	Report Number: 2585689
Sampled By:	Proj. Acct. code:	
Company:		

Reference Number	1467880-1
Sample Date	January 08, 2021
Sample Time	09:01
Sample Location	
Sample Description	Reservoir "C" / 8.5 °C
Sample Matrix	Drinking Water

Analyte	Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments	
Routine Water - Continued						
Nitrite - N	Dissolved	mg/L	<0.01	0.01	1	Below MAC
Sulfate (SO4)	Dissolved	mg/L	19.1	0.1	500	Below AO
Hardness	as CaCO3 (extractable)	mg/L	97	1		
Total Dissolved Solids	Extractable	mg/L	166	1	500	Below AO

Analytical Report

Bill To: Clearbrook Waterworks District 2564 Clearbrook Road Abbotsford, BC, Canada V2T 2Y5	Project ID: Project Name: Project Location: LSD: P.O.:	Lot ID: 1467880 Control Number: C117929 Date Received: Jan 8, 2021 Date Reported: Jan 13, 2021 Report Number: 2585689
Attn: Accounts Payable	Proj. Acct. code:	
Sampled By:		
Company:		

Reference Number	1467880-2
Sample Date	January 08, 2021
Sample Time	09:29
Sample Location	
Sample Description	Well RW1-87/14 / 8.5 °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	Below OG	
Antimony	Extractable mg/L	0.00014	0.00002	0.006	Below MAC	
Arsenic	Extractable mg/L	0.0015	0.0001	0.010	Below MAC	
Barium	Extractable mg/L	0.021	0.0001	2.0	Below MAC	
Boron	Extractable mg/L	0.021	0.002	5	Below MAC	
Cadmium	Extractable mg/L	0.00001	0.00001	0.007	Below MAC	
Chromium	Extractable mg/L	0.00007	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	0.099	0.0001	7.0	Below MAC	
Uranium	Extractable mg/L	0.00019	0.00001	0.02	Below MAC	
Vanadium	Extractable mg/L	0.00038	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	<0.10	0.1	0.1	Below OG
Routine Water						
pH - Holding Time			Exceeded			
pH	at 25 °C		7.60	0.01	7.0-10.5	Within Range
Electrical Conductivity		µS/cm at 25 °C	278	1		
Calcium	Extractable	mg/L	29	0.01		
Iron	Extractable	mg/L	0.006	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	7.3	0.02		
Manganese	Extractable	mg/L	0.049	0.001	0.02 AO; 0.12 MAC	Above AO
Potassium	Extractable	mg/L	2.3	0.04		
Silicon	Extractable	mg/L	7.9	0.005		
Sodium	Extractable	mg/L	12	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	93	5		
Chloride	Dissolved	mg/L	15.8	0.05	250	Below AO
Fluoride	Dissolved	mg/L	<0.01	0.01	1.5	Below MAC
Nitrate - N	Dissolved	mg/L	0.91	0.01	10	Below MAC

Analytical Report

Bill To: Clearbrook Waterworks District	Project ID:	Lot ID: 1467880
2564 Clearbrook Road	Project Name:	Control Number: C117929
Abbotsford, BC, Canada	Project Location:	Date Received: Jan 8, 2021
V2T 2Y5	LSD:	Date Reported: Jan 13, 2021
Attn: Accounts Payable	P.O.:	Report Number: 2585689
Sampled By:	Proj. Acct. code:	
Company:		

Reference Number	1467880-2
Sample Date	January 08, 2021
Sample Time	09:29
Sample Location	
Sample Description	Well RW1-87/14 / 8.5 °C
Sample Matrix	Drinking Water

Analyte	Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments	
Routine Water - Continued						
Nitrite - N	Dissolved	mg/L	<0.01	0.01	1	Below MAC
Sulfate (SO4)	Dissolved	mg/L	22.7	0.1	500	Below AO
Hardness	as CaCO3 (extractable)	mg/L	102	1		
Total Dissolved Solids	Extractable	mg/L	169	1	500	Below AO

Analytical Report

Bill To: Clearbrook Waterworks District
2564 Clearbrook Road
Abbotsford, BC, Canada
V2T 2Y5
Attn: Accounts Payable
Sampled By:
Company:

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

Lot ID: **1467880**
Control Number: C117929
Date Received: Jan 8, 2021
Date Reported: Jan 13, 2021
Report Number: 2585689

Reference Number 1467880-3
Sample Date January 08, 2021
Sample Time 09:43
Sample Location
Sample Description Well RW2-63/17 / 8.5 °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	Below OG	
Antimony	Extractable mg/L	0.00009	0.00002	0.006	Below MAC	
Arsenic	Extractable mg/L	0.0007	0.0001	0.010	Below MAC	
Barium	Extractable mg/L	0.011	0.0001	2.0	Below MAC	
Boron	Extractable mg/L	0.016	0.002	5	Below MAC	
Cadmium	Extractable mg/L	0.00001	0.00001	0.007	Below MAC	
Chromium	Extractable mg/L	0.00008	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	0.00005	0.00001	0.02	Below MAC	
Vanadium	Extractable mg/L	0.00031	0.00005			
Zinc	Extractable mg/L	0.0008	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	4.0	2		
Physical and Aggregate Properties						
Colour	True	Colour units	<5	5		
Turbidity		NTU	0.26	0.1	0.1	Above OG
Routine Water						
pH - Holding Time			Exceeded			
pH	at 25 °C		7.31	0.01	7.0-10.5	Within Range
Electrical Conductivity		µS/cm at 25 °C	221	1		
Calcium	Extractable	mg/L	23	0.01		
Iron	Extractable	mg/L	0.008	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	6.0	0.02		
Manganese	Extractable	mg/L	0.008	0.001	0.02 AO; 0.12 MAC	Below AO
Potassium	Extractable	mg/L	1.5	0.04		
Silicon	Extractable	mg/L	8.8	0.005		
Sodium	Extractable	mg/L	7.1	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	66	5		
Chloride	Dissolved	mg/L	13.8	0.05	250	Below AO
Fluoride	Dissolved	mg/L	<0.01	0.01	1.5	Below MAC
Nitrate - N	Dissolved	mg/L	1.44	0.01	10	Below MAC

Analytical Report

Bill To: Clearbrook Waterworks District	Project ID:	Lot ID: 1467880
2564 Clearbrook Road	Project Name:	Control Number: C117929
Abbotsford, BC, Canada	Project Location:	Date Received: Jan 8, 2021
V2T 2Y5	LSD:	Date Reported: Jan 13, 2021
Attn: Accounts Payable	P.O.:	Report Number: 2585689
Sampled By:	Proj. Acct. code:	
Company:		

Reference Number	1467880-3
Sample Date	January 08, 2021
Sample Time	09:43
Sample Location	
Sample Description	Well RW2-63/17 / 8.5 °C
Sample Matrix	Drinking Water

Analyte	Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments	
Routine Water - Continued						
Nitrite - N	Dissolved	mg/L	<0.01	0.01	1	Below MAC
Sulfate (SO4)	Dissolved	mg/L	20.2	0.1	500	Below AO
Hardness	as CaCO3 (extractable)	mg/L	81	1		
Total Dissolved Solids	Extractable	mg/L	141	1	500	Below AO

Analytical Report

Bill To: Clearbrook Waterworks District 2564 Clearbrook Road Abbotsford, BC, Canada V2T 2Y5	Project ID: Project Name: Project Location: LSD: P.O.:	Lot ID: 1467880 Control Number: C117929 Date Received: Jan 8, 2021 Date Reported: Jan 13, 2021 Report Number: 2585689
Attn: Accounts Payable	Proj. Acct. code:	
Sampled By:		
Company:		

Reference Number	1467880-4
Sample Date	January 08, 2021
Sample Time	10:02
Sample Location	
Sample Description	Well RW3-93/11 / 8.5 °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	Below OG	
Antimony	Extractable mg/L	0.00005	0.00002	0.006	Below MAC	
Arsenic	Extractable mg/L	0.0004	0.0001	0.010	Below MAC	
Barium	Extractable mg/L	0.0070	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	0.00020	0.00005	0.05	Below MAC	
Copper	Extractable mg/L	0.0018	0.0005	1 AO; 2 MAC	Below AO	
Lead	Extractable mg/L	0.00008	0.00001	0.005	Below MAC	
Selenium	Extractable mg/L	0.0006	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	0.00040	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	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	90.0	2		
Physical and Aggregate Properties						
Colour	True	Colour units	<5	5		
Turbidity		NTU	0.10	0.1	0.1	Above OG
Routine Water						
pH - Holding Time			Exceeded			
pH	at 25 °C		7.07	0.01	7.0-10.5	Within Range
Electrical Conductivity		µS/cm at 25 °C	295	1		
Calcium	Extractable	mg/L	29	0.01		
Iron	Extractable	mg/L	0.010	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	7.1	0.02		
Manganese	Extractable	mg/L	0.008	0.001	0.02 AO; 0.12 MAC	Below AO
Potassium	Extractable	mg/L	1.5	0.04		
Silicon	Extractable	mg/L	9.9	0.005		
Sodium	Extractable	mg/L	9.9	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	55	5		
Chloride	Dissolved	mg/L	40.9	0.05	250	Below AO
Fluoride	Dissolved	mg/L	<0.01	0.01	1.5	Below MAC
Nitrate - N	Dissolved	mg/L	1.96	0.01	10	Below MAC

Analytical Report

Bill To: Clearbrook Waterworks District 2564 Clearbrook Road Abbotsford, BC, Canada V2T 2Y5	Project ID: Project Name: Project Location: LSD: P.O.:	Lot ID: 1467880 Control Number: C117929 Date Received: Jan 8, 2021 Date Reported: Jan 13, 2021 Report Number: 2585689
Attn: Accounts Payable	Proj. Acct. code:	
Sampled By:		
Company:		

Reference Number	1467880-4
Sample Date	January 08, 2021
Sample Time	10:02
Sample Location	
Sample Description	Well RW3-93/11 / 8.5 °C
Sample Matrix	Drinking Water

Analyte	Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water - Continued					
Nitrite - N	Dissolved mg/L	<0.01	0.01	1	Below MAC
Sulfate (SO4)	Dissolved mg/L	20.2	0.1	500	Below AO
Hardness	as CaCO3 (extractable) mg/L	102	1		
Total Dissolved Solids	Extractable mg/L	177	1	500	Below AO

Analytical Report

Bill To: Clearbrook Waterworks District 2564 Clearbrook Road Abbotsford, BC, Canada V2T 2Y5	Project ID: Project Name: Project Location: LSD: P.O.:	Lot ID: 1467880 Control Number: C117929 Date Received: Jan 8, 2021 Date Reported: Jan 13, 2021 Report Number: 2585689
Attn: Accounts Payable	Proj. Acct. code:	
Sampled By:		
Company:		

Reference Number	1467880-5
Sample Date	January 08, 2021
Sample Time	10:18
Sample Location	
Sample Description	Well RW7-00/13 / 8.5 °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	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	0.0063	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	0.00019	0.00005	0.05	Below MAC	
Copper	Extractable mg/L	0.0020	0.0005	1 AO; 2 MAC	Below AO	
Lead	Extractable mg/L	0.00020	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	0.00001	0.00001	0.02	Below MAC	
Vanadium	Extractable mg/L	0.00039	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	Below OG
Routine Water						
pH - Holding Time			Exceeded			
pH	at 25 °C		7.00	0.01	7.0-10.5	Within Range
Electrical Conductivity		µS/cm at 25 °C	234	1		
Calcium	Extractable	mg/L	24	0.01		
Iron	Extractable	mg/L	<0.004	0.004	0.3	Below AO
Magnesium	Extractable	mg/L	5.8	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	7.8	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	41	5		
Chloride	Dissolved	mg/L	31.7	0.05	250	Below AO
Fluoride	Dissolved	mg/L	<0.01	0.01	1.5	Below MAC
Nitrate - N	Dissolved	mg/L	2.66	0.01	10	Below MAC

Analytical Report

Bill To: Clearbrook Waterworks District	Project ID:	Lot ID: 1467880
2564 Clearbrook Road	Project Name:	Control Number: C117929
Abbotsford, BC, Canada	Project Location:	Date Received: Jan 8, 2021
V2T 2Y5	LSD:	Date Reported: Jan 13, 2021
Attn: Accounts Payable	P.O.:	Report Number: 2585689
Sampled By:	Proj. Acct. code:	
Company:		

Reference Number	1467880-5
Sample Date	January 08, 2021
Sample Time	10:18
Sample Location	
Sample Description	Well RW7-00/13 / 8.5 °C
Sample Matrix	Drinking Water

Analyte	Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments	
Routine Water - Continued						
Nitrite - N	Dissolved	mg/L	<0.01	0.01	1	Below MAC
Sulfate (SO4)	Dissolved	mg/L	14.5	0.1	500	Below AO
Hardness	as CaCO3 (extractable)	mg/L	83	1		
Total Dissolved Solids	Extractable	mg/L	148	1	500	Below AO

Approved by: 
 Max Hewitt
 Operations Manager

Methodology and Notes

Bill To: Clearbrook Waterworks District 2564 Clearbrook Road Abbotsford, BC, Canada V2T 2Y5	Project ID: Project Name: Project Location: LSD: P.O.:	Lot ID: 1467880 Control Number: C117929 Date Received: Jan 8, 2021 Date Reported: Jan 13, 2021 Report Number: 2585689
Attn: Accounts Payable	Proj. Acct. code:	
Sampled By:		
Company:		

Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Alk, pH, EC, Turb in water (BC)	APHA	* Alkalinity - Titration Method, 2320 B	Jan 8, 2021	Element Vancouver
Alk, pH, EC, Turb in water (BC)	APHA	* Conductivity, 2510 B	Jan 8, 2021	Element Vancouver
Alk, pH, EC, Turb in water (BC)	APHA	* pH - Electrometric Method, 4500-H+ B	Jan 8, 2021	Element Vancouver
Anions by IEC in water (VAN)	APHA	* Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	Jan 8, 2021	Element Vancouver
Heterotrophic (Standard) Plate Count (Aerobic SP) - VAN	APHA	Enzyme Substrate Method, 9215 E	Jan 8, 2021	Element Vancouver
Metals SemiTrace (Extractable) in water (VAN)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	Jan 12, 2021	Element Vancouver
Total and E-Coli - Colilert - DW (VAN)	APHA	Enzyme Substrate Test, APHA 9223 B	Jan 11, 2021	Element Vancouver
Trace Metals (extractable) in Water (VAN)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Jan 11, 2021	Element Vancouver
True Color in water (VAN)	APHA	* Spectrophotometric - Single Wavelength Method, 2120 C	Jan 8, 2021	Element Vancouver
Turbidity - Water (VAN)	APHA	* Turbidity - Nephelometric Method, 2130 B	Jan 8, 2021	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

Comments:

- Jan 11, 2021 - Sample 1467880-4; 7343123: Reduction of analytical volume was necessary for chloride analysis to bring results within the analytical range for sample 1467880-4. Detection limits are adjusted accordingly.
- Jan 11, 2021 - Sample 1467880-5; 7343124: Reduction of analytical volume was necessary for chloride analysis to bring results within the analytical range for sample 1467880-5. Detection limits are adjusted accordingly.
- Jan 13, 2021 - The analysis of water sample 1467880-1 to -3, and 1467880-5 is below Maximum Acceptable Concentrations for the chemical and bacteriological health related guidelines specified by the September 2020 Guidelines for Canadian Drinking Water Quality for the parameters tested.
- Jan 13, 2021 - The Total Coliforms result in sample 1467880-4 exceeded the maximum acceptable concentration (MAC) as specified by the September 2020 Guidelines for Canadian Drinking Water Quality.

Methodology and Notes

Bill To: Clearbrook Waterworks District	Project ID:	Lot ID: 1467880
2564 Clearbrook Road	Project Name:	Control Number: C117929
Abbotsford, BC, Canada	Project Location:	Date Received: Jan 8, 2021
V2T 2Y5	LSD:	Date Reported: Jan 13, 2021
Attn: Accounts Payable	P.O.:	Report Number: 2585689
Sampled By:	Proj. Acct. code:	
Company:		

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.

The test report shall not be reproduced except in full, without the written approval of the laboratory.

Appendix D
Water Quality Reports – Detailed Analysis

Report Transmission Cover Page

Bill To: Clearbrook Waterworks District 2564 Clearbrook Road Abbotsford, BC, Canada V2T 2Y5	Project ID: RW3-93/11 Project Name: Project Location: LSD: P.O.:	Lot ID: 1439750 Control Number: Date Received: Aug 12, 2020 Date Reported: Aug 20, 2020 Report Number: 2537829
Attn: Accounts Payable Sampled By: Company:	Proj. Acct. code:	

Contact	Company	Address
Accounts Payable	Clearbrook Waterworks District	2564 Clearbrook Road Abbotsford, BC V2T 2Y5 Phone: (604) 850-6621 Fax: (604) 850-7862 Email: office@clearbrookwaterworks.com
<u>Delivery</u>	<u>Format</u>	<u>Deliverables</u>
Email - Single Report	PDF	Invoice
Ineke Kalwij	Kalwij Water Dynamics Inc	P.O. Box 684 Station Main Port Coquitlam, BC V3B 6H9 Phone: (604) 475-4063 Fax: (604) 475-4062 Email: ineke@kalwijwaterdynamics.com
<u>Delivery</u>	<u>Format</u>	<u>Deliverables</u>
Email - Merge Reports	PDF	COC / Test Report
Ryan Federau	Clearbrook Waterworks District	2564 Clearbrook Road Abbotsford, BC V2T 2Y5 Phone: (604) 309-3986 Fax: (604) 850-7862 Email: ryan@clearbrookwaterworks.com
<u>Delivery</u>	<u>Format</u>	<u>Deliverables</u>
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	PDF	COA

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Analytical Report

Bill To: Clearbrook Waterworks District 2564 Clearbrook Road Abbotsford, BC, Canada V2T 2Y5	Project ID: RW3-93/11	Lot ID: 1439750
Attn: Accounts Payable	Project Name:	Control Number:
Sampled By:	Project Location:	Date Received: Aug 12, 2020
Company:	LSD:	Date Reported: Aug 20, 2020
	P.O.:	Report Number: 2537829
	Proj. Acct. code:	

Reference Number 1439750-1
Sample Date Aug 12, 2020
Sample Time 09:23
Sample Location
Sample Description Lynden St. / RW3-93/11 / 4.4 °C

Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Aggregate Organic Constituents					
Phenol	mg/L	<0.001			0.001
Metals Total					
Calcium	Total mg/L	30			0.01
Magnesium	Total mg/L	7.6			0.02
Potassium	Total mg/L	1.7			0.04
Silicon	Total mg/L	9.1			0.005
Sulfur	Total mg/L	6.0			0.02
Sodium	Total mg/L	10			0.1
Titanium	Total mg/L	0.004			0.002
Digestion	Preparation		Field Pres, digest as total Hg		
Mercury	Total mg/L	<0.00001			0.00005
Polycyclic Aromatic Hydrocarbons - Water					
Acenaphthene	µg/L	<0.1			0.1
Acenaphthylene	µg/L	<0.1			0.1
Acridine	µg/L	<0.05			0.05
Anthracene	µg/L	<0.1			0.1
Benzo(a)anthracene	µg/L	<0.01			0.01
Benzo(a)pyrene	µg/L	<0.01			0.01
Benzo(b)fluoranthene	µg/L	<0.01			0.01
Benzo(b+j)fluoranthene	µg/L	<0.04			0.02
Benzo(g,h,i)perylene	µg/L	<0.1			0.1
Benzo(k)fluoranthene	µg/L	<0.02			0.02
Chrysene	µg/L	<0.1			0.1
Dibenzo(a,h)anthracene	µg/L	<0.01			0.01
Fluoranthene	µg/L	<0.1			0.1
Fluorene	µg/L	<0.1			0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1			0.1
1-Methylnaphthalene	µg/L	<0.1			0.1
2-Methylnaphthalene	µg/L	<0.1			0.1
Naphthalene	µg/L	<0.1			0.1
Phenanthrene	µg/L	<0.1			0.1
Pyrene	µg/L	<0.02			0.02
Quinoline	µg/L	<0.01			0.01
PAH - Water - Surrogate Recovery					
2-Fluorobiphenyl	PAH - Surrogate %	81.4			50-140
Naphthalene-d8	PAH - Surrogate %	89.7			50-140
Quinoline-d7	PAH - Surrogate %	98.8			50-140
p-Terphenyl-d14	PAH - Surrogate %	105			50-140

Analytical Report

Bill To: Clearbrook Waterworks District 2564 Clearbrook Road Abbotsford, BC, Canada V2T 2Y5	Project ID: RW3-93/11	Lot ID: 1439750
Attn: Accounts Payable	Project Name:	Control Number:
Sampled By:	Project Location:	Date Received: Aug 12, 2020
Company:	LSD:	Date Reported: Aug 20, 2020
	P.O.:	Report Number: 2537829
	Proj. Acct. code:	

Reference Number 1439750-1
Sample Date Aug 12, 2020
Sample Time 09:23
Sample Location
Sample Description Lynden St. / RW3-93/11 / 4.4 °C

Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Chlorinated Hydrocarbon Screen - Water					
Pentachloroethane	µg/L	<0.1			0.1
1,3-Dichlorobenzene	µg/L	<0.1			0.1
1,4-Dichlorobenzene	µg/L	<0.1			0.1
1,2-Dichlorobenzene	µg/L	<0.1			0.1
Hexachloroethane	µg/L	<0.1			0.1
1,2,4-Trichlorobenzene	µg/L	<0.1			0.1
Hexachlorobutadiene	µg/L	<0.1			0.1
Hexachloropropene	µg/L	<0.1			0.1
1,2,4,5-Tetrachlorobenzene	µg/L	<0.1			0.1
Hexachlorocyclopentadiene	µg/L	<0.1			0.1
2-Chloronaphthalene	µg/L	<0.1			0.1
Pentachlorobenzene	µg/L	<0.1			0.1
Hexachlorobenzene	µg/L	<0.1			0.1
Total	µg/L	<0.1			0.1
Chlorinated Hydrocarbon - Water - Surrogates					
Nitrobenzene-d5	Surrogate	%	117		50-140
2-Fluorobiphenyl	Surrogate	%	119		50-140
4-Terphenyl-d14	Surrogate	%	121		50-140
Haloacetic Acids - Water					
Monochloroacetic Acid	µg/L	<2.0			2.0
Monobromoacetic Acid	µg/L	<2.0			2.0
Dichloroacetic Acid	µg/L	<2.0			2.0
Trichloroacetic Acid	µg/L	<2.0			2.0
Bromochloroacetic Acid	µg/L	<2.0			2.0
Dibromoacetic Acid	µg/L	<2.0			2.0
Total Haloacetic Acids (HAA6)	µg/L	<12.0			12.0
2,3-Dibromopropionic acid	%	82			50-150
VOC Screen - Water					
Acetone	µg/L	<25			25
Acetonitrile	µg/L	<25			25
Acrylonitrile	µg/L	<25			25
Allyl Chloride	µg/L	<25			25
Bromobenzene	µg/L	<1			1
Bromochloromethane	µg/L	<1			1
Bromodichloromethane	µg/L	<1			1
Bromoform	µg/L	<1			1
Bromomethane	µg/L	<10			10
2-Butanone (MEK)	µg/L	<25			25

Analytical Report

Bill To: Clearbrook Waterworks District 2564 Clearbrook Road Abbotsford, BC, Canada V2T 2Y5	Project ID: RW3-93/11	Lot ID: 1439750
Attn: Accounts Payable	Project Name:	Control Number:
Sampled By:	Project Location:	Date Received: Aug 12, 2020
Company:	LSD:	Date Reported: Aug 20, 2020
	P.O.:	Report Number: 2537829
	Proj. Acct. code:	

Reference Number 1439750-1
Sample Date Aug 12, 2020
Sample Time 09:23
Sample Location
Sample Description Lynden St. / RW3-93/11 / 4.4 °C

Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
VOC Screen - Water - Continued					
n-Butylbenzene	µg/L	<1			1
sec-Butylbenzene	µg/L	<1			1
tert-Butylbenzene	µg/L	<1			1
Carbon Tetrachloride	µg/L	<0.50			0.50
Chlorobenzene	µg/L	<1.0			1.0
Chloroethane	µg/L	<10			10
2-Chloroethyl Vinyl Ether	µg/L	<1			1
Chloroform	µg/L	<1.0			1.0
Chloromethane	µg/L	<10			10
2-Chlorotoluene	µg/L	<1			1
4-Chlorotoluene	µg/L	<1			1
Dibromochloromethane	µg/L	<1			1
1,2-Dibromo-3-Chloropropane	µg/L	<1			1
1,2-Dibromoethane	µg/L	<1			1
Dibromomethane	µg/L	<1			1
1,4-Dichloro-2-Butene(cis)	µg/L	<25			25
1,4-Dichloro-2-Butene(trans)	µg/L	<25			25
1,2-Dichlorobenzene	µg/L	<0.6			0.6
1,3-Dichlorobenzene	µg/L	<1			1
1,4-Dichlorobenzene	µg/L	<1			1
1,1-Dichloroethane	µg/L	<1			1
1,2-Dichloroethane	µg/L	<1			1.0
1,1-Dichloroethene	µg/L	<1			1
1,2-Dichloroethene(cis)	µg/L	<1			1
1,2-Dichloroethene(trans)	µg/L	<1			1
Dichlorodifluoromethane	µg/L	<10			10
1,2-Dichloropropane	µg/L	<1			1
1,3-Dichloropropane	µg/L	<1			1
2,2-Dichloropropane	µg/L	<10			10
1,1-Dichloropropene	µg/L	<1			1
1,3-Dichloropropene(cis)	µg/L	<1			1
1,3-Dichloropropene(trans)	µg/L	<1			1
Ethyl Methacrylate	µg/L	<25			25
Hexachlorobutadiene	µg/L	<1.0			1.0
Hexachloroethane	µg/L	<1			1
2-Hexanone	µg/L	<25			25
Iodomethane	µg/L	<10			10

Analytical Report

Bill To: Clearbrook Waterworks District 2564 Clearbrook Road Abbotsford, BC, Canada V2T 2Y5	Project ID: RW3-93/11	Lot ID: 1439750
Attn: Accounts Payable	Project Name:	Control Number:
Sampled By:	Project Location:	Date Received: Aug 12, 2020
Company:	LSD:	Date Reported: Aug 20, 2020
	P.O.:	Report Number: 2537829
	Proj. Acct. code:	

Reference Number 1439750-1
Sample Date Aug 12, 2020
Sample Time 09:23
Sample Location
Sample Description Lynden St. / RW3-93/11 / 4.4 °C

Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
VOC Screen - Water - Continued					
p-Isopropyltoluene	µg/L	<5			5
Methacrylonitrile	µg/L	<25			25
Methylene Chloride	µg/L	<5			5
Methyl Methacrylate	µg/L	<25			25
4-Methyl-2-Pentanone (MIBK)	µg/L	<25			25
Naphthalene	µg/L	<5			5
Pentachloroethane	µg/L	<1			1
Propionitrile	µg/L	<25			25
iso-Propylbenzene	µg/L	<1			1
n-Propylbenzene	µg/L	<1			1
1,1,1,2-Tetrachloroethane	µg/L	<1			1
1,1,2,2-Tetrachloroethane	µg/L	<1			1
Tetrachloroethene	µg/L	<1			1
1,2,3-Trichlorobenzene	µg/L	<1			1
1,2,4-Trichlorobenzene	µg/L	<1			1
1,1,1-Trichloroethane	µg/L	<1			1
1,1,2-Trichloroethane	µg/L	<1			1
Trichloroethene	µg/L	<1			1
Trichlorofluoromethane	µg/L	<1			1
1,2,3-Trichloropropane	µg/L	<1			1
1,2,4-Trimethylbenzene	µg/L	<1			1
1,3,5-Trimethylbenzene	µg/L	<1			1
Vinyl Chloride	µg/L	<1.0			1.0
VOC - Water - Surrogate Recovery					
Dibromofluoromethane	EPA Surrogate	%	91		50-140
Toluene-d8	EPA Surrogate	%	98		50-140
Bromofluorobenzene	EPA Surrogate	%	102		50-140
Multiresidue Pesticides in Water					
BifenoX	µg/L	<0.5			0.5
Carboxin	µg/L	<0.5			0.5
Deltamethrin	µg/L	<0.5			0.5
Fenamiphos	µg/L	<0.5			0.5
Fenvalerate	µg/L	<0.5			0.5
Methoprene	µg/L	<0.5			0.5
Norflurazon	µg/L	<0.5			0.5
Pebulate	µg/L	<0.5			0.5
Prometon	µg/L	<0.5			0.5
Propargite	µg/L	<0.5			0.5

Analytical Report

Bill To: Clearbrook Waterworks District 2564 Clearbrook Road Abbotsford, BC, Canada V2T 2Y5	Project ID: RW3-93/11	Lot ID: 1439750
Attn: Accounts Payable	Project Name:	Control Number:
Sampled By:	Project Location:	Date Received: Aug 12, 2020
Company:	LSD:	Date Reported: Aug 20, 2020
	P.O.:	Report Number: 2537829
	Proj. Acct. code:	

Reference Number 1439750-1
Sample Date Aug 12, 2020
Sample Time 09:23
Sample Location
Sample Description Lynden St. / RW3-93/11 / 4.4 °C

Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Multiresidue Pesticides in Water - Continued					
Propiconazole	µg/L	<0.5			0.5
Terbacil	µg/L	<0.5			0.5
Vernolate	µg/L	<0.5			0.5
Multiresidue Pesticides - Water - Surrogate Rec.					
TPP	Surrogate %	108			50-140
Organochlorine Pesticides in Water					
Aldrin	µg/L	<0.5			0.5
BHC (alpha isomer)	µg/L	<0.5			0.5
BHC (beta isomer)	µg/L	<0.5			0.5
BHC (delta isomer)	µg/L	<0.5			0.5
Captan	µg/L	<3.0			3.0
Chlorbenseide	µg/L	<0.5			0.5
Chlordane-cis	µg/L	<0.5			0.5
Chlordane-trans	µg/L	<0.5			0.5
Chlorfenson	µg/L	<0.5			0.5
Chlorothalonil	µg/L	<0.5			0.5
Chlorthal-dimethyl	µg/L	<0.5			0.5
DDD-o,p'	µg/L	<0.5			0.5
DDD-p,p'	µg/L	<0.5			0.5
DDE-o,p'	µg/L	<0.5			0.5
DDE-p,p'	µg/L	<0.5			0.5
DDT-o,p'	µg/L	<0.5			0.5
DDT-p,p'	µg/L	<0.5			0.5
Dichlofluanid	µg/L	<0.5			0.5
Dieldrin	µg/L	<0.5			0.5
Endosulfan I	µg/L	<0.5			0.5
Endosulfan II	µg/L	<0.5			0.5
Endosulfan sulfate	µg/L	<0.5			0.5
Endrin	µg/L	<0.5			0.5
Folpet	µg/L	<3.0			3.0
Heptachlor	µg/L	<0.5			0.5
Heptachlor Epoxide	µg/L	<0.5			0.5
Hexachlorobenzene	µg/L	<0.5			0.5
Lindane	µg/L	<0.5			0.5
Methoxychlor	µg/L	<0.5			0.5
Mirex	µg/L	<0.5			0.5
Permethrin-cis	µg/L	<0.5			0.5
Permethrin-trans	µg/L	<0.5			0.5

Analytical Report

Bill To: Clearbrook Waterworks District 2564 Clearbrook Road Abbotsford, BC, Canada V2T 2Y5	Project ID: RW3-93/11	Lot ID: 1439750
Attn: Accounts Payable	Project Name:	Control Number:
Sampled By:	Project Location:	Date Received: Aug 12, 2020
Company:	LSD:	Date Reported: Aug 20, 2020
	P.O.:	Report Number: 2537829
	Proj. Acct. code:	

Reference Number 1439750-1
Sample Date Aug 12, 2020
Sample Time 09:23
Sample Location
Sample Description Lynden St. / RW3-93/11 / 4.4 °C

Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Organochlorine Pesticides in Water - Continued					
Procyimidone	µg/L	<0.5			0.5
Propachlor	µg/L	<0.5			0.5
Quintozene	µg/L	<0.5			0.5
Tecnazene	µg/L	<0.5			0.5
Tetradifon	µg/L	<0.5			0.5
Tolyfluand	µg/L	<0.5			0.5
Triadimefon	µg/L	<0.5			0.5
Vinclozolin	µg/L	<0.5			0.5
Organochlorine Pesticides -Water- Surrogate Rec.					
TPP	Surrogate %	108			50-140
Organophosphate Pesticides in Water					
Aspon	µg/L	<0.5			0.5
Azinphos-ethyl	µg/L	<0.5			0.5
Azinphos-methyl	µg/L	<0.5			0.5
Bromophos	µg/L	<0.5			0.5
Bromophos-ethyl	µg/L	<0.5			0.5
Carbophenothion	µg/L	<0.5			0.5
Chlorfenvinphos	µg/L	<0.5			0.5
Chlormephos	µg/L	<0.5			0.5
Chlorpyrifos	µg/L	<0.5			0.5
Chlorpyrifos-methyl	µg/L	<0.5			0.5
Chlorthiophos	µg/L	<0.5			0.5
Cyanophos	µg/L	<0.5			0.5
Demeton	µg/L	<0.5			0.5
Diazinon	µg/L	<0.10			0.10
Dichlofenthion	µg/L	<0.5			0.5
Dimethoate	µg/L	<0.5			0.5
Disulfoton	µg/L	<0.5			0.5
Ethion	µg/L	<0.5			0.5
Fenclorphos	µg/L	<0.5			0.5
Fenitrothion	µg/L	<0.5			0.5
Fenthion	µg/L	<0.5			0.5
Fonofos	µg/L	<0.5			0.5
Isofenphos	µg/L	<0.5			0.5
Malaoxon	µg/L	<0.5			0.5
Malathion	µg/L	<0.1			0.1
Methyl Parathion	µg/L	<0.5			0.5
Mevinphos	µg/L	<0.5			0.5

Analytical Report

Bill To: Clearbrook Waterworks District 2564 Clearbrook Road Abbotsford, BC, Canada V2T 2Y5	Project ID: RW3-93/11	Lot ID: 1439750
Attn: Accounts Payable	Project Name:	Control Number:
Sampled By:	Project Location:	Date Received: Aug 12, 2020
Company:	LSD:	Date Reported: Aug 20, 2020
	P.O.:	Report Number: 2537829
	Proj. Acct. code:	

Reference Number 1439750-1
Sample Date Aug 12, 2020
Sample Time 09:23
Sample Location
Sample Description Lynden St. / RW3-93/11 / 4.4 °C

Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Organophosphate Pesticides in Water - Continued					
Parathion	µg/L	<0.5			0.5
Phorate	µg/L	<0.5			0.5
Phosalone	µg/L	<0.5			0.5
Phosmet	µg/L	<0.5			0.5
Phosphamidon	µg/L	<0.5			0.5
Pirimiphos-ethyl	µg/L	<0.5			0.5
Pirimiphos-methyl	µg/L	<0.5			0.5
Pyrazophos	µg/L	<0.5			0.5
Quinalophos	µg/L	<0.5			0.5
Sulfotep	µg/L	<0.5			0.5
Terbufos	µg/L	<0.5			0.5
Tetrachlorvinphos	µg/L	<0.5			0.5
Organophosphate Pesticides -Water- Surrogate Rec.					
TPP	Surrogate	%	108		50-140
Neutral Herbicides in Water					
Alachlor	µg/L	<0.5			0.5
Benfluralin	µg/L	<0.5			0.5
Butylate	µg/L	<0.5			0.5
Chlorpropham	µg/L	<0.5			0.5
Diallate	µg/L	<0.5			0.5
Dichlobenil	µg/L	<0.5			0.5
Diclofop-methyl	µg/L	<0.2			0.2
Diphenylamine	µg/L	<0.5			0.5
Eptam (EPTC)	µg/L	<0.5			0.5
Ethalfuralin	µg/L	<0.5			0.5
Fenoxaprop-ethyl	µg/L	<0.5			0.5
Fluazifop-p-butyl	µg/L	<0.5			0.5
Hexazinone	µg/L	<0.5			0.5
Metalaxyl	µg/L	<0.5			0.5
Metolachlor	µg/L	<0.5			0.5
Metribuzin	µg/L	<0.5			0.5
Pirimicarb	µg/L	<0.5			0.5
Profluralin	µg/L	<0.5			0.5
Prometryn	µg/L	<0.5			0.5
Propazine	µg/L	<0.5			0.5
Propyzamide	µg/L	<0.5			0.5
Quizalofop-ethyl	µg/L	<0.5			0.5
Simetryn	µg/L	<0.5			0.5

Analytical Report

Bill To: Clearbrook Waterworks District 2564 Clearbrook Road Abbotsford, BC, Canada V2T 2Y5	Project ID: RW3-93/11	Lot ID: 1439750
Attn: Accounts Payable	Project Name:	Control Number:
Sampled By:	Project Location:	Date Received: Aug 12, 2020
Company:	LSD:	Date Reported: Aug 20, 2020
	P.O.:	Report Number: 2537829
	Proj. Acct. code:	

Reference Number 1439750-1
Sample Date Aug 12, 2020
Sample Time 09:23
Sample Location
Sample Description Lynden St. / RW3-93/11 / 4.4 °C

Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Neutral Herbicides in Water - Continued					
Terbutylazine	µg/L	<0.5			0.5
Terbutryn	µg/L	<0.5			0.5
Triallate	µg/L	<0.10			0.10
Trifluralin	µg/L	<0.1			0.1
Neutral Herbicides - Water - Surrogate Recovery					
TPP	Surrogate %	108			50-140
Carbamates in Water					
3-Hydroxycarbofuran	µg/L	<0.1			0.1
Aldicarb	µg/L	<0.1			0.1
Aldicarb sulfone	µg/L	<0.1			0.1
Aldicarb sulfoxide	µg/L	<0.1			0.1
Bendiocarb	µg/L	<0.1			0.1
BPMC	µg/L	<0.1			0.1
Carbaryl	µg/L	<0.1			0.1
Carbofuran	µg/L	<0.1			0.1
Imidacloprid	µg/L	<0.1			0.1
Methiocarb	µg/L	<0.1			0.1
Methomyl	µg/L	<0.1			0.1
Oxamyl	µg/L	<0.1			0.1
Promecarb	µg/L	<0.1			0.1
Propoxur	µg/L	<0.1			0.1
Carbamates in Water - Surrogate Recovery					
BDMC	Surrogate %	110.8			50-140
Acid Herbicides in Water					
2,4,5-T	µg/L	<0.1			0.1
2,4,5-TP	µg/L	<0.1			0.1
2,4-D	µg/L	<0.1			0.1
2,4-DB	µg/L	<0.1			0.1
Bromoxynil	µg/L	<0.1			0.1
Clopyralid	µg/L	<0.1			0.1
Dicamba	µg/L	<0.1			0.1
Dichlorprop	µg/L	<0.1			0.1
Dinoseb	µg/L	<0.1			0.1
Imazamox	µg/L	<0.1			0.1
Imazapyr	µg/L	<0.1			0.1
Imazethapyr	µg/L	<0.1			0.1
MCPA	µg/L	<0.1			0.1
MCPB	µg/L	<0.1			0.1

Analytical Report

Bill To: Clearbrook Waterworks District 2564 Clearbrook Road Abbotsford, BC, Canada V2T 2Y5	Project ID: RW3-93/11	Lot ID: 1439750
Attn: Accounts Payable	Project Name:	Control Number:
Sampled By:	Project Location:	Date Received: Aug 12, 2020
Company:	LSD:	Date Reported: Aug 20, 2020
	P.O.:	Report Number: 2537829
	Proj. Acct. code:	

Reference Number 1439750-1
Sample Date Aug 12, 2020
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Sample Description Lynden St. / RW3-93/11 / 4.4 °C

Matrix Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Acid Herbicides in Water - Continued					
Mecoprop	µg/L	<0.1			0.1
Picloram	µg/L	<0.1			0.1
Triclopyr	µg/L	<0.1			0.1
Acid Herbicides - Water - Surrogate Recovery					
3,5-DCBA	Surrogate	%	110		50-140
Trace Metals Total					
Aluminum	Total	mg/L	0.002		0.001
Antimony	Total	mg/L	0.00005		0.00002
Arsenic	Total	mg/L	0.0003		0.0001
Barium	Total	mg/L	0.0075		0.0001
Beryllium	Total	mg/L	<0.00005		0.00005
Bismuth	Total	mg/L	<0.0001		0.0001
Boron	Total	mg/L	0.012		0.002
Cadmium	Total	mg/L	0.00002		0.00001
Chromium	Total	mg/L	0.00020		0.00005
Cobalt	Total	mg/L	<0.00002		0.00002
Copper	Total	mg/L	0.0008		0.0002
Iron	Total	mg/L	0.004		0.002
Lead	Total	mg/L	0.00010		0.00001
Lithium	Total	mg/L	0.0010		0.0005
Manganese	Total	mg/L	<0.001		0.001
Molybdenum	Total	mg/L	0.00016		0.00002
Nickel	Total	mg/L	0.0012		0.0002
Selenium	Total	mg/L	0.0003		0.0002
Silver	Total	mg/L	<0.00001		0.00001
Strontium	Total	mg/L	0.14		0.0001
Tellurium	Total	mg/L	<0.00005		0.00005
Thallium	Total	mg/L	<0.00001		0.00001
Thorium	Total	mg/L	<0.00005		0.00005
Tin	Total	mg/L	<0.0001		0.0001
Uranium	Total	mg/L	0.00004		0.00001
Vanadium	Total	mg/L	0.00009		0.00005
Zinc	Total	mg/L	0.0057		0.0005
Zirconium	Total	mg/L	<0.0001		0.0001
Subcontracted Analysis					
Nitritotriacetic Acid		mg/L	<0.1		0.1

Analytical Report

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2564 Clearbrook Road	Project Name:	Control Number:
Abbotsford, BC, Canada	Project Location:	Date Received: Aug 12, 2020
V2T 2Y5	LSD:	Date Reported: Aug 20, 2020
Attn: Accounts Payable	P.O.:	Report Number: 2537829
Sampled By:	Proj. Acct. code:	
Company:		

Approved by: 
Anthony Neumann, MSc
General 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.

Methodology and Notes

Bill To: Clearbrook Waterworks District 2564 Clearbrook Road Abbotsford, BC, Canada V2T 2Y5	Project ID: RW3-93/11	Lot ID: 1439750
Attn: Accounts Payable	Project Name:	Control Number:
Sampled By:	Project Location:	Date Received: Aug 12, 2020
Company:	LSD:	Date Reported: Aug 20, 2020
	P.O.:	Report Number: 2537829
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Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Acid Herbicides - Water	US EPA	US-EPA 8321B, 8321B	Aug 14, 2020	Element Calgary
Acid Herbicides - Water	USGS	* Determination of Pesticides in Water by Graphitized Carbon-Based SPE & HPLC/MS, O-2060-1	Aug 14, 2020	Element Calgary
Carbamates - Water	US EPA	* N-methylcarbamates by High Performance Liquid Chromatography (HPLC), 8318	Aug 14, 2020	Element Calgary
CHHY - Water	US EPA	* Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry, 8270	Aug 16, 2020	Element Calgary
FV2 Pesticides - Water	JAOAC	* Multi-Res Determination of Pesticides in FV by GC-MSD & LC, vol78	Aug 17, 2020	Element Calgary
Haloacetic Acids - Water	US EPA	* Determination of Haloacetic Acids and Dalapon in drinking water by liquid-liquid microextraction, derivatization, and gas chromatography with electron capture detection, 552.3	Aug 13, 2020	Element Calgary
Mercury Low Level (Total) in water (VAN)	EPA	* Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	Aug 17, 2020	Element Vancouver
Metals SemiTrace (Total) in Water (VAN)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	Aug 17, 2020	Element Vancouver
Neutral Herbicides - Water	US EPA	* OC Pesticides by Gas Chromatography, 8081B	Aug 14, 2020	Element Calgary
Nitilotriacetic acid in water	Ext. Lab	Analysis performed by external laboratory,	Aug 18, 2020	Saskatchewan Research Council
Organochlorine Pesticides - Water	US EPA	* OC Pesticides by Gas Chromatography, 8081B	Aug 17, 2020	Element Calgary
Organophosphate Pesticides - Water	US EPA	* OP Compounds by GC: Capillary Column Technique, 8141B	Aug 17, 2020	Element Calgary
PAH - Water (VAN)	BCELM	* Polycyclic Aromatic Hydrocarbons in Water by GC/MS - PBM, PAH Water	Aug 14, 2020	Element Vancouver
Phenol in water	APHA	* Direct Photometric Method, 5530 D	Aug 17, 2020	Element Edmonton - Roper Road
Trace Metals (Total) in Water (VAN)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Aug 17, 2020	Element Vancouver
VOC - Water	US EPA	* Volatile Organic Compounds by GCMS / Purge and Trap for Aqueous Samples, 8260B/5030B	Aug 13, 2020	Element Calgary

* Reference Method Modified

References

APHA	Standard Methods for the Examination of Water and Wastewater
BCELM	B.C. Environmental Laboratory Manual
EPA	Environmental Protection Agency Test Methods - US
Ext. Lab	External Laboratory
JAOAC	J. Assoc. Off. Anal. Chem.
US EPA	US Environmental Protection Agency Test Methods
USGS	U.S. Geological Survey National Water Quality Laboratory

Methodology and Notes

Bill To: Clearbrook Waterworks District	Project ID: RW3-93/11	Lot ID: 1439750
2564 Clearbrook Road	Project Name:	Control Number:
Abbotsford, BC, Canada	Project Location:	Date Received: Aug 12, 2020
V2T 2Y5	LSD:	Date Reported: Aug 20, 2020
Attn: Accounts Payable	P.O.:	Report Number: 2537829
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Company:		

References

APHA	Standard Methods for the Examination of Water and Wastewater
BCELM	B.C. Environmental Laboratory Manual
EPA	Environmental Protection Agency Test Methods - US
Ext. Lab	External Laboratory
JAOAC	J. Assoc. Off. Anal. Chem.
US EPA	US Environmental Protection Agency Test Methods
USGS	U.S. Geological Survey National Water Quality Laboratory

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