

# **Annual Drinking Water Quality Monitoring Report**

2024

Joseph Law, Utilities Superintendent PUBLIC WORKS, UTILITIES DEPARTMENT | 1350 SWORD AVE

## **PURPOSE**

The City of Quesnel Annual Drinking Water Quality Monitoring Report is intended to make public all water quality monitoring results from the 2024 calendar year. Such annual reporting is required of all water purveyors in British Columbia under the Drinking Water Protection Act and the related Drinking Water Protection Regulations.

The Drinking Water Protection Act also requires that:

- Water system construction proposals must be approved by Public Health Engineers.
- Water system operators must operate their systems in compliance with the requirements of the Act through operating permits, which may contain specific conditions and are set and approved by the Health Authority Drinking Water Officer.
- Minimum water treatment and water quality standards are met, and monitoring and testing carried out, as required.
- Water suppliers must have microbiological samples analyzed by a laboratory which has been approved by the Provincial Health Officer;
- Operators of drinking water systems serving more than 500 individuals must be certified as operators through the Environmental Operators Certification Program; and
- Public notification must be made in case of water quality problems. This ensures accountability to the community for the water service provided.

These requirements are set in place in order to ensure the delivery of safe, potable drinking water to all consumers.

#### WATER SYSTEM OVERVIEW

The City of Quesnel water distribution system provides untreated potable drinking water for use by approximately 10,000 residents, commercial businesses, and local industry. The water system is comprised of:

#### **Six Groundwater Production Wells**

- Well 3 Rolph Street
- Well 6 Rolph Street
- Well 9 Carson Subdivision

#### **Seven Reservoirs**

- Sugarloaf Reservoir
- Pinecrest Reservoir
- South Quesnel Reservoir
- Shadow Heights Reservoir

## **Five Booster Pump Stations**

- Northstar Booster Station
- Healy Street Booster Station
- Dawson Ave Booster Station

- Well 7 North Fraser Drive
- Well 8 Hilborn Road
- Well 10 Hilborn Road
- Dragon Hill Reservoir
- Abbott Heights Reservoir #1
- Abbott Heights Reservoir #2
- Pinecrest Booster Station
- Findlay Booster Station

# Three Main Pressure Reducing Valve (PRV) Stations

Brownmiller PRV

Lewis Drive PRV

Johnston Ave PRV

There are approximately 114 km of water main, 460 fire hydrants, and 3642 individual service connections.

The City of Quesnel also operates one bulk water delivery site where, for a fee, customers may fill containers for personal use.

In 2024 water consumption (as metered at the source) for the City of Quesnel amounted to a total of 2,281,557 cubic meters of groundwater pumped by the production wells, a decrease of 3.18% from the 2023 total volume of 2,347,660 cubic meters. For reference, 1 cubic meter of water consists of 1000 liters.

#### WATER MANAGEMENT

In the interest of public health and environmental protection, the Environmental Operators Certification Program (EOCP) is tasked by the Drinking Water Protection Act with the responsibility for classification of facilities and certification of water operators to enable the prudent management of water in British Columbia and the Yukon.

The EOCP requires that all facilities have (at minimum) one operator on each shift with a level of certification matching the facility classification. Furthermore, all system operators must be certified to a level appropriate to their role and level of responsibility. A facility's classification level is determined by its size, components, and level of complexity.

The City of Quesnel water distribution system is identified as a Class III facility by the EOCP. The experience and training requirements for an operator to receive a Level III certification are:

- Operator Level II Certificate PLUS
- 2 years related post-secondary or 90 CEUs (continuing education unit, 1 CEU equals 10 hours approved training) PLUS.
- 4 years operating experience at a Class II facility (or higher)
- Including 2 years Direct Responsible Charge at a Class II facility (or higher)

In 2024, staffing of the Water Distribution System consisted of:

- 1 Level III Water Distribution Operator position
- 6 Level II Water Distribution Operator positions
- 2 Level I Water Distribution Operator positions
- 2 Labourer / Operator-in-training positions

As EOCP certified Water Distribution Operators, staff are required to achieve a minimum score of 70% on written examinations and must receive 24 hours of approved relevant training in every two-year period to maintain their certification. Operator training is critical to maintaining facility classification and ensures that current industry standards and best practices are being met. Training also provides staff with an opportunity to network with other operators over common challenges faced in field operations.

Operator duties include (but are not limited to) operating system monitoring, routine maintenance, fire hydrant maintenance and repair, water quality sampling, emergency repairs, new construction, investigation of water quality complaints, responding to calls for service from the general public, flushing of water mains, and responding to after-hours emergencies.

All operator time is also shared between duties within the City of Quesnel wastewater collection system, storm water collection system, snow removal operations, and in support provided to other departments as required.

The City of Quesnel maintains an up-to-date Emergency Response and Contingency Plan (ERCP). The ERCP is reviewed and updated annually to ensure that standard operating procedures remain applicable and up to date. An up-to-date ERCP is a requirement of the City of Quesnel water system's Permit to Operate. In response to the drought conditions experienced by our region in 2024, Northern Health instated a requirement for water systems to also include a drought-specific section in their ERCP. In Quesnel, a bylaw to regulate use of the municipal water services is in place and includes provisions for the temporary restriction of water usage in any emergency or under extraordinary circumstances. In addition to the bylaw, the City of Quesnel's official Water Conservation Strategy was adopted in 2020 to provide a solid framework toward the sustainable use of the community's water supply.

Leak detection works aimed at identifying and preventing water losses in the distribution system are undertaken each year by system Operators and private contractors specializing in the field of leak detection.

A SCADA (supervisory, control, and data acquisition) Monitoring System is utilized by the City of Quesnel, which enables staff to observe real-time data and information related to water system operating conditions, including water well operation and reservoir levels. System operators have the ability to remotely respond to system conditions and demands, which reduces equipment failure and increases pumping efficiency.

#### WATER QUALITY MONITORING

In order to ensure the delivery of safe drinking water, there is a program in place to monitor water quality at the source and throughout the distribution system network.

The City of Quesnel sends water samples to a laboratory approved by the Provincial Health Officer for all sampling points and is notified of results and concerns.

The sampling parameters used to monitor potability are listed in the Guidelines for Canadian Drinking Water Quality (GCDWQ) and the British Columbia Drinking Water Regulations (BCDWR). These sampling parameters are used as indicators for bacteriological, chemical and physical contaminants.

Please note that in May 2019, the Guidelines for Canadian Drinking Water Quality were revised to include a Maximum Allowable Concentration (MAC) for manganese in drinking water. The MAC for total manganese in drinking water is 0.12 mg/L (120  $\mu$ g/L). The aesthetic objective (AO) for total manganese in drinking water is 0.02 mg/L (20  $\mu$ g/L).

The water produced by 5 of the 6 production wells does not meet the standard set by the Guidelines for Canadian Drinking Water Quality for manganese concentrations. Although, sampling results do show that manganese levels in the distribution system vary from above to below the MAC due to mixing and settling.

On June 10, 2022, Northern Health placed a Water Quality Advisory on the City of Quesnel's water distribution system and required the City of Quesnel to issue a public notice containing information on manganese in drinking water.

In order to have the Water Quality Advisory lifted six corrective actions are needed:

- 1. Distribute updated notice and information to residents
- 2. Continue additional sampling to determine the level of manganese in the distribution system
- 3. Continue talks with a qualified drinking water professional to assess the water source and propose a suitable treatment system to reduce the level of manganese to below the Maximum Acceptable Concentration
- 4. Submit the treatment proposal to Northern Health in the form of a Construction Permit Application
- 5. Upon receipt of approval from a Northern Health Public Health Engineer, in the form of a Construction Permit, install the approved treatment system
- 6. Conduct post-treatment samples in accordance with the conditions of the Construction Permit to verify treatment efficacy

Since the inception of the MAC requirements for manganese in the GCDWQ in 2019, the City of Quesnel has been working closely with a team of qualified drinking water professionals to design a water treatment system adequate for the removal of manganese from the public drinking water. The water treatment project has completed the pre-design phase.

Further to Water Quality Advisory placed on the Water System in 2022, the 2024 Annual Routine Inspection of the water system conducted by Northern Health officials made note of the absence of a treatment system adequate to reduce manganese levels to below the MAC in the GCDWQ, as well as the long-standing water quality advisory. The 2024 Annual Routine Inspection Report included the requirement that corrective actions addressing this issue be undertaken within a designated time period. As such, new requirements were imposed upon the water system's Permit to Operate, which is reviewed and authorized by the regional health authority on an annual basis. The new conditions added to the City's Permit to Operate in 2024 include the following:

- By June 2025, propose a preliminary report for water treatment to reduce manganese to below the maximum acceptable concentrations (MAC – 0.12 mg/L) given in the Guideline for Canadian Drinking Water Quality (GCDWQ). The proposal must be in the form of a construction permit application(s) to the Public Health Engineer
- By June 2030, implement water treatment that includes corrective measures for reducing manganese to below MAC given in the GCDWQ at distribution site
- Operator must be certified to the level specified by the Environmental Operators Certification Program

The City of Quesnel continues to work with qualified drinking water professionals on this water treatment project - with the end goal being the installation of a water treatment system designed to bring the manganese levels below the MAC set forth by the GCDWQ and lifting of the water quality advisory.

The number of samples to be taken from the source and distribution system as required by provincial regulations is based upon population. The minimum number of samples to be taken for the City of Quesnel's approximately 10,000 residents is 13 per month. The City of Quesnel exceeds that number of monthly samples. Drinking water samples are collected at 16 individual sites bi-weekly, and analyzed for total coliforms, E. coli, heterotrophic plate count (HPC), manganese, and turbidity. All reservoirs and wells are tested on a monthly basis for bacterial contaminants and manganese levels. In addition to the bacteriological and manganese parameters, additional testing is done for chemical & physical parameters.

Samples are taken at the start, middle and end of the entire City water distribution system.

If it is observed during testing that certain parameters exceed the limits specified in the Guidelines for Canadian Drinking Water Quality or the British Columbia Drinking Water Regulation, a procedure is in place for re-testing and notification for any results or conditions that render or could render the water unfit to drink.

The standard protocol when a water sample is found to contain the presence of coliforms, however minute, is to resample the water immediately at the same location and resubmit for testing. The provincial Environmental Health Officer will determine if any action by the City of Quesnel is necessary only after a second test also shows the presence of coliforms.

In accordance with the regulations of our operating permit, the City has a plan in place to respond to emergencies to ensure the delivery of safe drinking water to all its residents.

Water sampling in 2024 showed:

- 341 samples tested for E. coli resulting in 0 (zero) exceedances
- 341 samples tested for Total Coliform resulting in 2 exceedances with subsequent testing proving negative for total coliforms

In all cases of exceedance Northern Health was notified immediately and approved of the re-sampling plans.

## **DISTRBUTION SYSTEM PROJECTS**

In 2024 an investment (ongoing from 2023) of capital funds was put toward a Supervisory Control and Data Acquisition (SCADA) System Upgrade Project. This project includes upgrades to existing communications systems, control systems modernization, new installation at additional sites, hardware improvements, and an operating software platform overhaul. The project is ongoing and also includes upgrades to the Wastewater Collection System.

The City of Quesnel also invested 2024 capital funds toward the Lewis Drive Watermain Replacement Project. Utilizing a combination of traditional open trench and directional drilling techniques, Utilities Department operators worked alongside a crew of directional drilling specialists to install 170 meters

of 250mm high density polyethylene (HDPE) watermain on Lewis Drive between the intersections of Perry Street and Pierce Street. The need for a full replacement of this section of crucial water system trunk main was sparked by multiple failures of the existing asbestos cement pipe in recent years. HDPE pipe was selected as the preferred pipe material because of its high tensile strength and resistance to deformation under tension – characteristics which will provide an extra level protection against future mainline failures caused by unfavorable ground conditions in this area of Quesnel.

Another notable capital project which moved forward in 2024 is the Pumping Well #11 Project, which, when completed, will realize a considerable increase in water production abilities and enhanced reliability of the water distribution system. Advancements made on this project in 2024 saw the actual drilling of a 400mm diameter well casing to a depth of 48.8m and the subsequent well field development works. Completion of these two stages of the PW 11 project marks a major milestone for this multiyear initiative. In addition to the well drilling and development, a well yield capacity assessment and water chemistry analysis phase of the project began.

In the interest of maintaining the current pumping capacity of the water distribution system, a redevelopment of one supply well, PW #7, was undertaken in 2024. This maintenance project was funded from the 2024 Operational Budget. PW #7 was first drilled in 1986 and is relied upon to provide approximately 20% of the water consumed by the City of Quesnel annually. Redevelopment of a water well is necessary periodically in order to remove encrustation on the well screen and sedimentation in the well field – both of which will gradually reduce the flow rate of water into the well casing over time. Pre and post redevelopment testing proved the project effectively served to restore the wells capacity by a factor of 48%. Based on these results, the City's consultants recommend planning for redevelopment to take place at this site every 4 or 5 years.

Complaints regarding water quality are addressed and followed up on a case-by-case basis. The majority of customer complaints are of "dirty" or black water. This is due to sediment, mainly comprised of manganese. found in the water which adheres to pipe walls in the distribution system until it is disturbed or breaks free. Homeowners are advised to run a cold tap until the water clears. In some cases, operators will flush the water mains through a hydrant or blowoff. All mains are flushed each fall to remove mineral scale and buildup in the lines in addition to ensuring proper operation and maintenance of all fire hydrants.

There are occasional complaints of cold water smelling like rotten eggs or sulfur. This is often caused by the water having a reaction with the small diameter "feed line" tubing which connects the household plumbing to the faucet under the sink. It is most common in homes that have new or recently upgraded taps or plumbing fixtures. A corrective measure for this is to suggest homeowners replace the feed lines with metal tubing such as copper or alternatively clean the lines with sodium hypochlorite (household bleach), then rinse and reinstall.

City of Quesnel Bylaw 1567 was adopted in 2005 to ensure provisions for the elimination of Cross Connections between potable water and any non-potable source. The City of Quesnel has two certified Backflow Assembly Testers on staff who annually test assemblies in parks and the water supply system to protect against potential backflows and cross connections. They also install backflow prevention devices, which are a secondary line of defence for backflow prevention. It is the responsibility of the owner or operator of private buildings to install and test the approved backflow assembly upon installation and annually thereafter by a certified tester. Following the test, a copy of the report is to be forwarded to the City of Quesnel. A fully realized Cross Connection Control Program has not been completely implemented as there is a lack of resources and staff to track and account

for these assemblies. What staff time is available is focused on communication with contractors, plumbers, and high-risk users. The main group addressed is industrial, commercial and institutions. Utilities Department staff communicate concerns and keep a watchful eye out for any potential cross connections.

## CONCLUSION

The 2024 City of Quesnel Annual Drinking Water Quality Monitoring Report is made available to the public and presented to Council as required by the Drinking Water Protection Act and related British Columbia Drinking Water Regulations. This requirement is in place in order to ensure accountability to the community for the water service provided.

Additional information may be obtained from the City of Quesnel Public Works, Utilities Department at (250)992-6330, attention: Joseph Law, Utilities Superintendent.

# Water System Inspection Report

Inspection Information	
Facility name	Quesnel CWS
Facility number	
Officer	NI EHO 9
Inspection type	Routine
Inspection date	July 15, 2024
Follow-up	No
Inspection	
required	
Hazard rating	Low

**Critical Hazards** - These items relate to public health or safety, and must receive immediate attention.

# **Operation & Maintenance -** These items must be corrected within a designated time period.

## 313 - Inadequate treatment

Observation: No treatment available at this facility. Previous chemical testing results analysis results show manganese above maximum acceptable concentration (MAC). Facility currently on water quality advisory and the emergency response plan has already been activated.

Correction: Install adquate treatment to reducing manganese to below the maximum acceptable concentration (MAC) 0.12 mg/ L as per the Guideline for Canadian Drinking Water Quality (GCDWQ). Submit a construction permit application with a treatment proposal adquate for reducing manganese to below the MAC.

Correct By: 15-Jul-2025

316 - Source unprotected and subject to contamination

Observation: Fence open at the back of the well house #7. Operator aware and is working on closing the opening. (Public Health Significance) Although well house is always locked, unprotected water source can give easy access to unauthorised individuals or pests which may contaminate the area that may contaminate ground water and may lead to waterborne diseases.

Correction: Mend the fence or put a temporary block on the opening to ensure no unauthourized individuals or pests have access near the well surroundings.

Correct By: 15-Jul-2024

# **Corrected Violations**

No corrections entered

#### Comments

Routine Inspection completed by David Creighton (Drinking Water Specialist), Viraj Chauhan (EHO), Himanshu Rawat (student EHO) and Loreen Ngwenya (EHO).

## **Action Required:**

- -Well house for Well (W) #7, fence had an opening, operator aware and working on closing it. Ensure the wells surrounding is protected at all the times.
- -Ensure that there is adequate treatment, to reduce manganese to below the MAC (0.12 mg/L).

## **General Comments: -**

- -An up-to-date emergency response and contingency plan (ERCP) available.
- -Operator working on adding a drought response to the ERCP.
- -Environmental Operators Certificates Program (EOCP) classifies the facility as a Level III water distribution (WD).
- -EOCP Level III WD certified operator available.
- -System Supervisory Control and Data Acquisition (SCADA) in place.
- -Among other; check valves, control valves, pressure relief valve and wedge gate valves, are available.
- -The 2023 Annual Drinking Water Monitoring Report available and published on city website.

## Source: -

- -Six wells in use with this facility.
- -All well identification tags available and attached to each well.
- -Identification numbers for well #3 -29650, #6 -29648, #7 -29647, #8 -29649, #9 -29651, and #10 -35588.
- -W # 3 not often used mainly used as a backup, operator planning on decommission the well.
- -W # 7 provide water for the west side of Quesnel and single project analysis done 2019 showed manganese below MAC.
- -All wells are located within its own well house surrounded by concrete.
- -Secure key-locked exterior doors available with a security door alarm that sends notification when door opens.
- -Interior and exterior of all well houses was pest free at the time of inspection.
- -All floors of the well house slope towards the drainage, disposing well discharge into the sewer.
- -Back-up generator hooked for well # 8 and well # 10.

#### Reservoirs and Distribution: -

- -The following reservoirs; Abbot 1&2, Sugar Loaf, Tatchell, Dragon Hill, Pinecrest and Shadow heights available.
- -Dragon Hill capacity 539, 467 gal.
- -All reservoirs are gravity fed and booster pumps available.
- -The two Abbot reservoirs, Shadow Heights and Sugar Loaf reservoirs are made of concrete.
- -External inspections of the reservoirs done once every three weeks.
- -Internal inspections by camera done to determine the need or schedule for flushing, cleaning, and disinfecting of the reservoir.
- -No evidence of pest or pests' activity observed at the time of inspection.
- -All reservoirs surrounded by a fence, and the gates is always padlocked.
- -Frequent and consistent water monitoring bacteriological sampling every three weeks.
- -Bacteriological sampling has been maintained and previous results have been satisfactory.

Loreen Ngwenya EHO 1

# Public Notice – HealthSpace Data Entry (Water Quality Advisory, Boil Water Notice, Do Not Use Notice)

OFFICER: Lynnette Winsor TIME SPENT: 1hr

WATER SYSTEM NAME: Quesnel CWS		
WATER SYSTEM ADDRESS 410 Kinchant Street	CITY: Quesnel	POPULATION SERVED: 10,000
WATER SYSTEM TYPE: WS1 ⊠ WS2 □ WS3 □ WS4 □	Reason for terminating	the Public Notice:
ADVISORY TYPE: Do Not Use □ Boil Water Notice □ Water Quality Advisory ⊠		
START DATE: 2022/06/10		
PUBLIC NOTICE ISSUED ⊠ RESCINDED □		
*Note for rescinding notice:		
Steps Taken to Remedy: Information packages containing information on manganese in drinking waresidents.  Corrective Actions Remaining: 1. Distribute updated notice and information to residents 2. Continue additional sampling to determine the level of manganese in the distribution systedistribution system and submit to an accredited lab for manganese testing. Provide sample 3. Continue talks with a qualified drinking water professional to assess the water source and manganese to below the Maximum Acceptable Concentration. 4. Submit the treatment proposal to Northern Health in the form of a Construction Permit ap 5. Upon receipt of approval from a Northern Health Public Health Engineer, in the form of a 6. Conduct post-treatment samples in accordance with the conditions of the Construction Permits and Construction Permits applies in accordance with the conditions of the Construction Permits and Construction Permits applies in accordance with the conditions of the Construction Permits and Construction Permits applies in accordance with the conditions of the Construction Permits applies in accordance with the conditions of the Construction Permits applies in accordance with the conditions of the Construction Permits applies in accordance with the conditions of the Construction Permits applies in accordance with the conditions of the Construction Permits applies in the condition	em. Collect samples fron results to Northern Healt d propose a suitable treat plication. Construction Permit, inst	n multiple points throughout the h. tment system to reduce the level of tall the approved treatment system.
<u>Underlying Problems:</u> Chemical sampling history shows consistent manganese concentrations above the MAC in aesthetic concern in drinking water (e.g. causing stains on laundry, plumbing fixtures, etc.). from long term exposure to high levels of manganese in drinking water. This new informatio water.	However, new scientific	studies show potential health effects

protect all Canadians, but is based on the most vulnerable/sensitive popula manganese, another source of water, such as bottled water, should be used	2 mg/L (120μg/L) for manganese in drinking water. The MAC is intended to tion (e.g. infants and young children). If drinking water exceeds the MAC for d for preparing baby formula for infants and young children. Adults who drinking and children, but may wish to consider other sources of drinking water or home
☐Unapproved water supply system or construction works	⊠Unacceptable chemical and physical water quality results
□Untreated drinking water at risk of containing pathogens	□Surveillance data indicates drinking water linked to outbreak or illness
□Insufficient treatment or disinfectant residual	☐Inadequate operations and maintenance
☐Source water quality deterioration or contamination	□Water treatment equipment failure
□Excessive turbidity compromising distributed water quality	□Distribution system integrity failure
□Unacceptable microbiological water quality results	□Routine maintenance and planned works
□Inadequate construction or protection of distribution, storage and other	□Other cause not on this list
waterworks	

# PERMIT TO OPERATE

A Drinking Water System with 301-10000 Connections

System Name:

**Quesnel CWS** 

Physical Location:

**Quesnel CWS** 

**410 Kinchant Street** 

Quesnel BC

Owner Name:

City of Quesnel - Water

**Conditions of Permit** 

Permitted to Operate: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec

- Maintain a minimum of thirteen water bacteriology samples per month unless a greater frequency is requested by the Drinking Water Officer.
- Maintain an up-to-date Emergency Response and Contingency Plan.
- Submit water chemistry data once every year unless the Environmental Health Officer requests a greater frequency.
- Develop and implement a wellhead/aquifer protection program as well as a distribution system integrity program.
- Operator must be trained and certified to the level specified by the Environmental Operators Certification Program.
- By June 2025, propose a preliminary report for water treatment to reduce manganese to below maximum acceptable concentrations (MAC 0.12 mg/L) given in the Guideline for Canadian Drinking Water Quality (GCDWQ). The proposal must be in form of construction permit application(s) to the Public Health Engineer.
- By June 2030, implement water treatment that include corrective measure(s) for reducing manganese to below MAC given in the GCDWQ at distribution site.

29-Sep-2009 Effective Permit Date Lynnstte Winsor Environmental Health Officer

10-Sep-2024
Permit Revised Date









REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

ATTENTION

Joe Law

PO NUMBER

**PROJECT** 

Bi-Weekly - First Week

PROJECT INFO

WORK ORDER

24A2852

RECEIVED / TEMP

2024-01-30 14:10 / 11.6°C

REPORTED

2024-02-05 16:22

COC NUMBER

No Number

#### Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks



We've Got Chemistry



Ahead of the Curve



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: https://www.caro.ca/terms-conditions

If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead Account Manager M what

1-888-311-8846 | www.caro.ca

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



REPORTED TO Quesnel, City of Bi-Weekly - First Week				WORK ORDER REPORTED	24A2852 2024-02-0	5 16:22
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
94E4 S Airport (24A2852-01)   Matrix: Groun	d Water   Samp	oled: 2024-01-29 10	:00			
Field Parameters						
Temperature, field	6.1	AO ≤ 15		°C	2024-01-29	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-01-31	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-01-30	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-01-30	HT1
E. coli	< 1	MAC = 0		CFU/100 mL	2024-01-30	-A-20 V
Total Metals						
Manganese, total	0.0905	MAC = 0.12	0.00020	mg/L	2024-02-01	
Field Parameters  Temperature, field	6.2	AO ≤ 15		°C	2024-01-29	
	0.2	AO 3 13		C	2024-01-29	
General Parameters	z 0 10	OG < 1	0.40	NTU	2024.04.24	
Turbidity	< 0.10	OG < 1	0.10	NIO	2024-01-31	
Microbiological Parameters						
Coliforms, Total	<1	MAC = 0		CFU/100 mL	2024-01-30	1174
Heterotrophic Plate Count  E. coli	< 5 < 1	N/A MAC = 0		CFU/mL CFU/100 mL	2024-01-30 2024-01-30	HT1
vincuit.		WAC - 0		CI O/100 IIIE	2024-01-30	
Total Metals	100000	1.12 - 272	de la defenda		2027 20121	
Manganese, total  94E7 S Marsh Dr. (24A2852-03)   Matrix: Gro	0.00341	MAC = 0.12	0.00020	mg/L	2024-02-01	
Field Parameters	100		777			
Temperature, field	6.9	AO ≤ 15		°C	2024-01-29	
General Parameters	300					
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-01-31	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	4	CFU/100 mL	2024-01-30	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-01-30	HT1
E. coli	< 1	MAC = 0		CFU/100 mL	2024-01-30	.,,,
Total Metals						



REPORTED TO Quesnel, City of			and the Liver of Association of the Lot Lot	WORK ORDER	24A2852	F 40 00
PROJECT Bi-Weekly - First Week				REPORTED	2024-02-0	5 16:22
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
94E8 S Graham Ave. (24A2852-04)   Matrix: 0	Ground Water	Sampled: 2024-01	-29 10:45			
Field Parameters						
Temperature, field	6.3	AO ≤ 15		°C	2024-01-29	
General Parameters						
Turbidity	0.14	OG < 1	0.10	NTU	2024-01-31	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-01-30	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-01-30	HT1
E. coli	< 1	MAC = 0		CFU/100 mL	2024-01-30	
Total Metals						
Manganese, total	0.0894	MAC = 0.12	0.00020	mg/L	2024-02-01	
Field Parameters  Temperature, field	4.9	AO ≤ 15		°C	2024-01-29	
	4.9	AO ≤ 15		°C	2024-01-29	
General Parameters						
Turbidity	0.10	OG < 1	0.10	NTU	2024-01-31	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-01-30	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-01-30	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-01-30	
Total Metals						
Manganese, total	0.0243	MAC = 0.12	0.00020	mg/L	2024-02-01	
94F0 S Pedersen Rd. (24A2852-06)   Matrix:	Ground Water	Sampled: 2024-0	1-29 13:45			
Field Parameters						
Temperature, field	7.2	AO ≤ 15		°C	2024-01-29	
General Parameters						
Turbidity	0.15	OG < 1	0.10	NTU	2024-01-31	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	- 1	CFU/100 mL	2024-01-30	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-01-30	HT1
E. coli	<1	MAC = 0		CFU/100 mL	2024-01-30	
Total Metals						
Manganese, total	0.0563	MAC = 0.12	0.00020	ma/L	2024-02-01	
manganese, total	0.0303	11110 0.12	0.00020			



Quesnel, City of

# **TEST RESULTS**

REPORTED TO

PROJECT Bi-Weekly - First Week				REPORTED	2024-02-0	5 16:22
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
35D91 New Carson Pit (24A2852-07)   Ma	trix: Ground Wate	r   Sampled: 2024-	01-29 14:45			
Field Parameters						
Temperature, field	7.0	AO ≤ 15		°C	2024-01-29	
General Parameters						
Turbidity	0.16	OG < 1	0.10	NTU	2024-01-31	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-01-30	
Heterotrophic Plate Count	5	N/A	5	CFU/mL	2024-01-30	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-01-30	
Total Metals						
Manganese, total	0.00511	MAC = 0.12	0.00020	mg/L	2024-02-01	

WORK ORDER

24A2852

## 179CA S Dennis Rd. (24A2852-08) | Matrix: Ground Water | Sampled: 2024-01-29 14:15

Field Parameters						
Temperature, field	7.0	AO ≤ 15		°C	2024-01-29	
General Parameters						
Turbidity	0.11	OG < 1	0.10	NTU	2024-01-31	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-01-30	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-01-30	HT
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-01-30	
Total Metals						
Manganese, total	0.151	MAC = 0.12	0.00020	mg/L	2024-02-01	

## Sample Qualifiers:

HT1 The sample was prepared and/or analyzed past the recommended holding time.



# APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO

Quesnel, City of

PROJECT

Bi-Weekly - First Week

WORK ORDER

24A2852

REPORTED

2024-02-05 16:22

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	<b>V</b>	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Heterotrophic Plate Count in Water	SM 9215 D (2022)	Membrane Filtration / Membrane Filtration	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	1	Kelowna

## Glossary of Terms:

RL Reporting Limit (default)

< Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres
CFU/mL Colony Forming Units per millilitre

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

NTU Nephelometric Turbidity Units
OG Operational Guideline (treated water)

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

#### **General Comments:**

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# **CERTIFICATE OF ANALYSIS**

REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

WORK ORDER

24B2150

No Number

PO NUMBER

**PROJECT** 

Bi-Weekly - First Week

RECEIVED / TEMP REPORTED 2024-02-21 13:06 / 7.8°C

COC NUMBER

2024-02-28 10:32

PROJECT INFO

# Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks



We've Got Chemistry



Ahead of the Curve



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

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If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead Account Manager M unshired

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	esnel, City of Veekly - First Week				WORK ORDER REPORTED	24B2150 2024-02-2	8 10:32
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifie
94E4 S Airport (24B21	50-01)   Matrix: Ground	d Water   Samp	oled: 2024-02-20 09	):40			
Field Parameters							
Temperature, field		6.8	AO ≤ 15		°C	2024-02-20	
General Parameters							
Turbidity		0.18	OG < 1	0.10	NTU	2024-02-22	
Microbiological Paramet	ers						
Coliforms, Total	0.0	< 1	MAC = 0	1	CFU/100 mL	2024-02-21	НТ3
Heterotrophic Plate Cou	int	< 5	N/A		CFU/mL	2024-02-21	HT1
E. coli	<u> </u>	<1	MAC = 0		CFU/100 mL	2024-02-21	HT3
Total Metals							
Manganese, total		0.0189	MAC = 0.12	0.00020		2024-02-26	
				7.5	mg/L	2024-02-20	
Field Parameters	2150-02)   Matrix: Grou	nd water   Sar	npied: 2024-02-20	10:20			
			10 - 15		°C	2024.02.20	
Temperature, field		4.4	AO ≤ 15		C	2024-02-20	
General Parameters							
Turbidity		0.12	OG < 1	0.10	NTU	2024-02-22	
Microbiological Paramet	ers						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-02-21	
Heterotrophic Plate Cou	int	< 5	N/A	5	CFU/mL	2024-02-21	HT1
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-02-21	
Total Metals							
Manganese, total		0.00277	MAC = 0.12	0.00020	ma/L	2024-02-26	
94E7 S Marsh Dr. (24E Field Parameters	32150-03)   Matrix: Grou	und Water   Sa	mpled: 2024-02-20	11:00			
Temperature, field		5.2	AO ≤ 15		°C	2024-02-20	
General Parameters							
Turbidity		< 0.10	OG < 1	0.10	NTU	2024-02-22	
Microbiological Paramet	are	1000		0.,0			
	CIS	100			22,000		
Coliforms, Total	.nt	< 1	MAC = 0		CFU/100 mL	2024-02-21	( 177 /
Heterotrophic Plate Cou E. coli	int	< 5	N/A		CFU/mL CFU/100 mL	2024-02-21	HT1
		<1	MAC = 0	1	CFU/100 ML	2024-02-21	
Total Metals							
Manganese, total		0.0765	MAC = 0.12	0.00020	mg/L	2024-02-26	



REPORTED TO

Quesnel, City of

PROJECT

Bi-Weekly - First Week

WORK ORDER

24B2150

REPORTED

2024-02-28 10:32

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
94E9 S West Fraser Rd. (24B2150-04	)   Matrix: Ground Wat	er   Sampled: 2024	-02-20 11:45			
Field Parameters						
Temperature, field	3.8	AO ≤ 15		°C	2024-02-20	
General Parameters						
Turbidity	0.13	OG < 1	0.10	NTU	2024-02-22	
Microbiological Parameters			100,400			
	. 64	MAC = 0	4	CEL 1/100 ml	2024 02 21	
Coliforms, Total	< 1 < 5	MAC = 0 N/A		CFU/100 mL CFU/mL	2024-02-21	HT1
Heterotrophic Plate Count  E. coli	< 1	MAC = 0		CFU/100 mL	2024-02-21	пл
		WAC - 0		OI O/100 IIIL	2024-02-21	
Total Metals	2020		0.00000		0004.00.00	
Manganese, total	0.0214	MAC = 0.12	0.00020	mg/L	2024-02-26	
Field Parameters  Temperature, field	5.4	AO ≤ 15		°C	2024-02-20	
	5.4	VO 7 10		J	2027-02-20	
General Parameters		1200	5.15		-1.11.20	
Turbidity	0.14	OG < 1	0.10	NTU	2024-02-22	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-02-21	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-02-21	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-02-21	
Total Metals						
Manganese, total	0.0924	MAC = 0.12	0.00020	mg/L	2024-02-26	
35D91 New Carson Pit (24B2150-06)  Field Parameters  Temperature, field	Matrix: Ground Wate	r   <b>Sampled: 2024-</b> AO ≤ 15	02-20 12:45	°C	2024-02-20	
General Parameters	4.0	= 10				
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-02-22	
I GI DIGITY	- 0.10	55 - 1	0.10	1,10	20210222	
Microbiological Parameters		1446		0511/400	0004 00 01	
Microbiological Parameters  Coliforms, Total	<1	MAC = 0		CFU/100 mL	2024-02-21	ШТ4
Microbiological Parameters  Coliforms, Total  Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-02-21	HT1
Microbiological Parameters  Coliforms, Total  Heterotrophic Plate Count  E. coli			5			HT1
Microbiological Parameters  Coliforms, Total  Heterotrophic Plate Count	< 5	N/A	5	CFU/mL CFU/100 mL	2024-02-21	HT1



REPORTED TO	Quesnel, City of	WORK ORDER	24B2150
PROJECT	Bi-Weekly - First Week	REPORTED	2024-02-28 10:32

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
179CA S Dennis Rd. (24B2150-07)	Matrix: Ground Water	Sampled: 2024-02	-20 14:00			
Field Parameters						
Temperature, field	6.7	AO ≤ 15		°C	2024-02-20	
General Parameters						
Turbidity	0.36	OG < 1	0.10	NTU	2024-02-22	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-02-21	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-02-21	HT1
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-02-21	
Total Metals						
Manganese, total	0.157	MAC = 0.12	0.00020	mg/L	2024-02-26	
94E8 S Graham Ave. (24B2150-08)				mg/L °C	2024-02-26	
94E8 S Graham Ave. (24B2150-08)   Field Parameters	Matrix: Ground Water	Sampled: 2024-02				
94E8 S Graham Ave. (24B2150-08)   Field Parameters Temperature, field	Matrix: Ground Water	Sampled: 2024-02	2-20 13:30			
94E8 S Graham Ave. (24B2150-08)   Field Parameters Temperature, field General Parameters	Matrix: Ground Water   5.6	Sampled: 2024-02 AO ≤ 15	2-20 13:30	°C	2024-02-20	
94E8 S Graham Ave. (24B2150-08)   Field Parameters Temperature, field General Parameters Turbidity	Matrix: Ground Water   5.6	Sampled: 2024-02 AO ≤ 15	2 <b>-20 13:30</b> 0.10	°C	2024-02-20	
94E8 S Graham Ave. (24B2150-08)   Field Parameters Temperature, field General Parameters Turbidity Microbiological Parameters	Matrix: Ground Water   5.6 0.21	Sampled: 2024-02  AO ≤ 15  OG < 1	0.10	°C NTU	2024-02-20	HT1
94E8 S Graham Ave. (24B2150-08)   Field Parameters Temperature, field General Parameters Turbidity Microbiological Parameters Coliforms, Total	Matrix: Ground Water   5.6	AO ≤ 15  OG < 1  MAC = 0	0.10 1 5	°C NTU CFU/100 mL	2024-02-20 2024-02-22 2024-02-21	HT1
94E8 S Graham Ave. (24B2150-08)   Field Parameters Temperature, field General Parameters Turbidity Microbiological Parameters Coliforms, Total Heterotrophic Plate Count	Matrix: Ground Water   5.6 0.21 < 1 < 5	AO ≤ 15  OG < 1  MAC = 0  N/A	0.10 1 5	°C  NTU  CFU/100 mL  CFU/mL	2024-02-20 2024-02-22 2024-02-21 2024-02-21	HT1

## Sample Qualifiers:

HT1 The sample was prepared and/or analyzed past the recommended holding time.

HT3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.



# **APPENDIX 1: SUPPORTING INFORMATION**

REPORTED TO

Quesnel, City of

**PROJECT** 

Bi-Weekly - First Week

WORK ORDER

24B2150

REPORTED

2024-02-28 10:32

Analysis Description	Method Ref.	Technique	Accredited	Location
Analysis Description	method Ref.	recinique	Accreated	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
Heterotrophic Plate Count in Water	SM 9215 D (2022)	Membrane Filtration / Membrane Filtration	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	1	Kelowna

Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

#### Glossary of Terms:

RL

Reporting Limit (default)

°C Degrees Celcius

AO Aesthetic Objective

CFU/100 mL

Colony Forming Units per 100 millilitres Colony Forming Units per millilitre

CFU/mL MAC

Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

NTU

<

Nephelometric Turbidity Units
Operational Guideline (treated water)

OG EPA

United States Environmental Protection Agency Test Methods

SM

Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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# CERTIFICATE OF ANALYSIS

REPORTED TO Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

PO NUMBER

**PROJECT** 

Bi-Weekly - First Week

**PROJECT INFO** 

WORK ORDER

REPORTED

24C2504

RECEIVED / TEMP

2024-03-21 14:17 / 7.6°C

2024-03-28 14:41

**COC NUMBER** No Number

#### Introduction:

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Authorized By:

**Brent Whitehead** Account Manager which

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				to the second second	the placement and the contract and the	=	
	nel, City of ekly - First Week				WORK ORDER REPORTED	24C2504 2024-03-2	8 14:41
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifie
94E4 S Airport (24C2504-	-01)   Matrix: Ground	Water   Samp	oled: 2024-03-20 10	):10			
Field Parameters							
Temperature, field		8.2	AO ≤ 15		°C	2024-03-20	
General Parameters							
Turbidity		0.31	OG < 1	0.10	NTU	2024-03-22	
Microbiological Parameters							
Coliforms, Total		< 1	MAC = 0	4	CFU/100 mL	2024 02 21	
Heterotrophic Plate Count		< 5	N/A		CFU/100 mL	2024-03-21 2024-03-21	HT1
E. coli		<1	MAC = 0		CFU/100 mL	2024-03-21	THE
Total Metals					2. 000 IIIL	_02.0021	
		0.0400	MAG = 0.40	0.00000	(1	2024 02 25	
Manganese, total		0.0160	MAC = 0.12	0.00020	ing/L	2024-03-25	
Field Parameters Temperature, field		7.9	AO ≤ 15		°C	2024-03-20	
General Parameters							
Turbidity		0.18	OG < 1	0.10	NTU	2024-03-22	
Microbiological Parameters							
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-03-21	
Heterotrophic Plate Count		< 5	N/A		CFU/mL	2024-03-21	HT1
E. coli		< 1	MAC = 0		CFU/100 mL	2024-03-21	
Total Metals							
Manganese, total		0.00396	MAC = 0.12	0.00020	ma/l	2024-03-25	
94E7 S Marsh Dr. (24C25	04-03)   Matrix: Grou	nd Water   Sa	mpled: 2024-03-20				
Field Parameters							
Temperature, field		8.1	AO ≤ 15		°C	2024-03-20	
General Parameters							
Turbidity		0.16	OG < 1	0.10	NTU	2024-03-22	
Microbiological Parameters	3						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-03-21	
Heterotrophic Plate Count		< 5	N/A		CFU/mL	2024-03-21	HT1
E. coli		< 1	MAC = 0		CFU/100 mL	2024-03-21	7136
Total Metals							
Manganese, total		0.0106	MAC = 0.12	0.00020	ma/l	2024-03-25	
manganese, total		0.0100	IVIAU - U. 12	0.00020	mg/L	2024-03-23	



REPORTED TO Quesnel, City of PROJECT Gi-Weekly - First Week

WORK ORDER REPORTED 24C2504 2024-03-28 14:41

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
94E8 S Graham Ave. (24C2504-04)   N	Matrix: Ground Water	Sampled: 2024-03	-20 10:40			
Field Parameters						
Temperature, field	8.8	AO ≤ 15		°C	2024-03-20	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-03-22	
Microbiological Parameters						
Coliforms, Total	<1	MAC = 0	1	CFU/100 mL	2024-03-21	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-03-21	HT1
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-03-21	
Total Metals						
Manganese, total	0.116	MAC = 0.12	0.00020	mg/L	2024-03-25	
Field Parameters Temperature, field	8.1	AO ≤ 15		°C	2024-03-20	
	8.1	AO < 15		°C	2024-03-20	
General Parameters						
Turbidity	0.20	OG < 1	0.10	NTU	2024-03-22	
Microbiological Parameters						
Microbiological Parameters	<1	MAC = 0	1	CFU/100 mL	2024-03-21	
Microbiological Parameters  Coliforms, Total	< 1 < 5	MAC = 0 N/A		CFU/100 mL	2024-03-21 2024-03-21	HT1
Microbiological Parameters		100,54	5	W.11 141 W.10 W. 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		HT1
Microbiological Parameters  Coliforms, Total  Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-03-21	HT1
Microbiological Parameters  Coliforms, Total  Heterotrophic Plate Count  E. coli	< 5	N/A	5	CFU/mL CFU/100 mL	2024-03-21	НТ1
Microbiological Parameters  Coliforms, Total  Heterotrophic Plate Count  E. coli  Total Metals	< 5 < 1 0.0303	N/A MAC = 0 MAC = 0.12	5 1 0.00020	CFU/mL CFU/100 mL	2024-03-21 2024-03-21	HT1
Microbiological Parameters  Coliforms, Total Heterotrophic Plate Count E. coli  Total Metals Manganese, total  94F0 S Pedersen Rd. (24C2504-06)	< 5 < 1 0.0303	N/A MAC = 0 MAC = 0.12	5 1 0.00020	CFU/mL CFU/100 mL	2024-03-21 2024-03-21	НТ1
Microbiological Parameters  Coliforms, Total Heterotrophic Plate Count E. coli  Total Metals Manganese, total  94F0 S Pedersen Rd. (24C2504-06)    Field Parameters	< 5 < 1 0.0303 Matrix: Ground Water	N/A MAC = 0 MAC = 0.12	5 1 0.00020	CFU/mL CFU/100 mL mg/L	2024-03-21 2024-03-21 2024-03-27	HT1
Microbiological Parameters  Coliforms, Total Heterotrophic Plate Count E. coli  Total Metals Manganese, total  94F0 S Pedersen Rd. (24C2504-06)    Field Parameters  Temperature, field	< 5 < 1 0.0303 Matrix: Ground Water	N/A MAC = 0 MAC = 0.12	5 1 0.00020 3-20 13:45	CFU/mL CFU/100 mL mg/L	2024-03-21 2024-03-21 2024-03-27	HT1
Microbiological Parameters  Coliforms, Total Heterotrophic Plate Count E. coli  Total Metals Manganese, total  94F0 S Pedersen Rd. (24C2504-06)    Field Parameters Temperature, field  General Parameters	< 5 < 1 0.0303 Matrix: Ground Water 8.2	N/A MAC = 0 MAC = 0.12   Sampled: 2024-0 AO ≤ 15	5 1 0.00020 3-20 13:45	CFU/mL CFU/100 mL mg/L	2024-03-21 2024-03-27 2024-03-27	HT1
Microbiological Parameters  Coliforms, Total Heterotrophic Plate Count E. coli  Total Metals Manganese, total  94F0 S Pedersen Rd. (24C2504-06)    Field Parameters Temperature, field  General Parameters Turbidity  Microbiological Parameters	< 5 < 1 0.0303 Matrix: Ground Water 8.2	N/A MAC = 0 MAC = 0.12   Sampled: 2024-0 AO ≤ 15	5 1 0.00020 <b>3-20 13:45</b> 0.10	CFU/mL CFU/100 mL mg/L	2024-03-21 2024-03-27 2024-03-27	HT1
Microbiological Parameters  Coliforms, Total Heterotrophic Plate Count E. coli  Total Metals Manganese, total  94F0 S Pedersen Rd. (24C2504-06)    Field Parameters Temperature, field  General Parameters Turbidity	< 5 < 1 0.0303 Matrix: Ground Water 8.2	N/A MAC = 0  MAC = 0.12    Sampled: 2024-0  AO ≤ 15  OG < 1	0.00020 3-20 13:45	CFU/mL CFU/100 mL mg/L  °C	2024-03-21 2024-03-27 2024-03-27 2024-03-20 2024-03-22	HT1
Microbiological Parameters  Coliforms, Total Heterotrophic Plate Count E. coli  Total Metals Manganese, total  94F0 S Pedersen Rd. (24C2504-06)    Field Parameters Temperature, field  General Parameters Turbidity  Microbiological Parameters Coliforms, Total	< 5 < 1 0.0303  Matrix: Ground Water  8.2  0.30 < 1	N/A MAC = 0  MAC = 0.12    Sampled: 2024-0  AO ≤ 15  OG < 1  MAC = 0	0.00020 3-20 13:45 0.10	CFU/100 mL  mg/L  °C  NTU  CFU/100 mL	2024-03-21 2024-03-27 2024-03-27 2024-03-20 2024-03-22	
Microbiological Parameters  Coliforms, Total Heterotrophic Plate Count E. coli  Total Metals Manganese, total  94F0 S Pedersen Rd. (24C2504-06)    Field Parameters Temperature, field  General Parameters Turbidity  Microbiological Parameters  Coliforms, Total Heterotrophic Plate Count	< 5 < 1  0.0303  Matrix: Ground Water  8.2  0.30  < 1 < 5	N/A MAC = 0  MAC = 0.12    Sampled: 2024-0  AO ≤ 15  OG < 1  MAC = 0  N/A	0.00020 3-20 13:45 0.10	°C  NTU  CFU/100 mL  CFU/100 mL  CFU/100 mL  CFU/mL	2024-03-21 2024-03-27 2024-03-27 2024-03-20 2024-03-22 2024-03-21 2024-03-21	



REPORTED TO Quesnel, City of PROJECT Bi-Weekly - First Week				WORK ORDER REPORTED	24C2504 2024-03-2	8 14:41
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
35D91 New Carson Pit (24C2504-07)   Matri	x: Ground Wate	r   Sampled: 2024-	03-20 11:00			
Field Parameters						
Temperature, field	8.6	AO ≤ 15		°C	2024-03-20	
General Parameters						
Turbidity	0.25	OG < 1	0.10	NTU	2024-03-22	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-03-21	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-03-21	HT1
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-03-21	
Total Metals						
Total Metals  Manganese, total	0.0571	MAC = 0.12	0.00020	mg/L	2024-03-25	
Manganese, total  179CA S Dennis Rd. (24C2504-08)   Matrix:				mg/L °C	2024-03-25	
Manganese, total  179CA S Dennis Rd. (24C2504-08)   Matrix:  Field Parameters  Temperature, field	Ground Water	Sampled: 2024-03				
Manganese, total  179CA S Dennis Rd. (24C2504-08)   Matrix:  Field Parameters  Temperature, field	Ground Water	Sampled: 2024-03	-20 14:40			
Manganese, total  179CA S Dennis Rd. (24C2504-08)   Matrix: Field Parameters Temperature, field  General Parameters Turbidity	Ground Water   8.4	Sampled: 2024-03 AO ≤ 15	-20 14:40	°C	2024-03-20	
Manganese, total  179CA S Dennis Rd. (24C2504-08)   Matrix: Field Parameters Temperature, field  General Parameters Turbidity	Ground Water   8.4	Sampled: 2024-03 AO ≤ 15	<b>-20 14:40</b> 0.10	°C	2024-03-20	
Manganese, total  179CA S Dennis Rd. (24C2504-08)   Matrix:  Field Parameters  Temperature, field  General Parameters  Turbidity  Microbiological Parameters	8.4 < 0.10	Sampled: 2024-03  AO ≤ 15  OG < 1	- <b>20 14:40</b> 0.10	°C NTU	2024-03-20	HT1
Manganese, total  179CA S Dennis Rd. (24C2504-08)   Matrix:  Field Parameters  Temperature, field  General Parameters  Turbidity  Microbiological Parameters  Coliforms, Total	8.4 < 0.10	Sampled: 2024-03  AO ≤ 15  OG < 1  MAC = 0	-20 14:40 0.10	°C NTU CFU/100 mL	2024-03-20 2024-03-22 2024-03-21	HT1
179CA S Dennis Rd. (24C2504-08)   Matrix:  Field Parameters  Temperature, field  General Parameters  Turbidity  Microbiological Parameters  Coliforms, Total  Heterotrophic Plate Count	8.4 < 0.10 < 1 < 5	Sampled: 2024-03  AO ≤ 15  OG < 1  MAC = 0  N/A	-20 14:40 0.10	°C  NTU  CFU/100 mL  CFU/mL	2024-03-20 2024-03-22 2024-03-21 2024-03-21	HT1



# APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO Q

Quesnel, City of

PROJECT

Bi-Weekly - First Week

WORK ORDER

24C2504

REPORTED

2024-03-28 14:41

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Heterotrophic Plate Count in Water	SM 9215 D (2022)	Membrane Filtration / Membrane Filtration	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	1	Kelowna

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

#### Glossary of Terms:

RL Reporting Limit (default)

Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres
CFU/mL Colony Forming Units per millilitre

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

NTU Nephelometric Turbidity Units
OG Operational Guideline (treated water)

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

#### **General Comments:**

The results in this report apply to the received samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Caro will dispose of all samples within 30 days of sample receipt, unless otherwise agreed. The quality control (QC) data is available upon request

Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted red. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do <u>not</u> take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager:bwhitehead@caro.ca

Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline (s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability or responsibility for any loss attributed from the use of these guidelines in any way.



# CERTIFICATE OF ANALYSIS



1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

WORK ORDER

24E2044

PO NUMBER

PROJECT PROJECT INFO

Bi-Weekly - First Week

RECEIVED / TEMP

2024-05-15 16:23 / 16.0°C

REPORTED

2024-05-24 13:57

COC NUMBER No Number

#### Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks



We've Got Chemistry



Ahead of the Curve



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: https://www.caro.ca/terms-conditions

If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead Account Manager M unshirt

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REPORTED TO PROJECT	Quesnel, City of Bi-Weekly - First Week				WORK ORDER REPORTED	24E2044 2024-05-2	4 13:57
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifie
94E4 S Airport (24	1E2044-01)   Matrix: Ground	d Water   Samp	oled: 2024-05-14 09	:30			
Field Parameters							
Temperature, field		8.7	AO ≤ 15		°C	2024-05-14	
General Parameters							
Turbidity		< 0.10	OG < 1	0.10	NTU	2024-05-17	
Microbiological Par	ameters	100000					
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-05-15	НТ3
Heterotrophic Plate	e Count	< 5	N/A		CFU/mL	2024-05-15	HT1
E. coli		< 1	MAC = 0		CFU/100 mL	2024-05-15	НТЗ
Total Metals							
Manganese, total		0.00298	MAC = 0.12	0.00020	ma/L	2024-05-24	
Field Parameters Temperature, field		9.2	AO ≤ 15		°C	2024-05-14	
San Alexander Tax		3.2	A0 = 15		0	2024-03-14	
General Parameters		.040	00.11	0.40	NELL	0004.05.47	
Turbidity	T. Alm	< 0.10	OG < 1	0.10	NTU	2024-05-17	
Microbiological Par	ameters						
Coliforms, Total		< 1	MAC = 0		CFU/100 mL	2024-05-15	
Heterotrophic Plate	e Count	23	N/A		CFU/mL	2024-05-15	HT1
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-05-15	
Total Metals							
Manganese, total		0.00642	MAC = 0.12	0.00020	mg/L	2024-05-20	
94E7 S Marsh Dr.	(24E2044-03)   Matrix: Gro	und Water   Sa	mpled: 2024-05-14	10:10			
Field Parameters							
Temperature, field		8.9	AO ≤ 15		°C	2024-05-14	
General Parameters							
Turbidity		< 0.10	OG < 1	0.10	NTU	2024-05-17	
Microbiological Par	ameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-05-15	НТ3
Heterotrophic Plate	e Count	26	N/A		CFU/mL	2024-05-15	HT1
		< 1	MAC = 0		CFU/100 mL	2024-05-15	НТ3
E. coli							
Total Metals							



REPORTED TO	
PROJECT	

Quesnel, City of

Bi-Weekly - First Week

WORK ORDER

24E2044

REPORTED

2024-05-24 13:57

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
94E8 S Graham Ave. (24E2044-04)   I	Matrix: Ground Water	Sampled: 2024-05	-14 10:40			
Field Parameters						
Temperature, field	9.2	AO ≤ 15		°C	2024-05-14	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-05-17	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-05-15	
Heterotrophic Plate Count	14	N/A		CFU/mL	2024-05-15	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-05-15	
Total Metals						
Manganese, total	0.0682	MAC = 0.12	0.00020	mg/L	2024-05-24	
Field Parameters						
Temperature, field	8.1	AO ≤ 15		°C	2024-05-14	
	0.1	= 10				
General Parameters	< 0.10	OG < 1	0.10	NTU	2024-05-17	
Turbidity	< 0.10	OG < 1	0.10	NIO	2024-03-17	
Microbiological Parameters				05111100	0004.05.45	
Coliforms, Total	< 1	MAC = 0		CFU/100 mL	2024-05-15	LITA
Heterotrophic Plate Count	10	N/A MAC = 0		CFU/mL CFU/100 mL	2024-05-15 2024-05-15	HT1
E. coli	<u> </u>	IVIAC - 0		CPO/100 IIIL	2024-03-13	
Total Metals						
Managanaca total	0.00273	MAC = 0.12	0.00020	mg/L	2024-05-20	
Manganese, total						
94F0 S Pedersen Rd. (24E2044-06)						
94F0 S Pedersen Rd. (24E2044-06)				°C	2024-05-14	
94F0 S Pedersen Rd. (24E2044-06)   Field Parameters Temperature, field	Matrix: Ground Water	Sampled: 2024-0		°C	2024-05-14	
94F0 S Pedersen Rd. (24E2044-06)   Field Parameters Temperature, field	Matrix: Ground Water	Sampled: 2024-0	5-14 13:55	°C NTU	2024-05-14	
94F0 S Pedersen Rd. (24E2044-06)    Field Parameters  Temperature, field  General Parameters  Turbidity	Matrix: Ground Water	<b>Sampled: 2024-0</b> 5 AO ≤ 15	5-14 13:55			
94F0 S Pedersen Rd. (24E2044-06)   Field Parameters Temperature, field General Parameters	Matrix: Ground Water	<b>Sampled: 2024-0</b> 5 AO ≤ 15	5 <b>-14 13:55</b> 0.10			
94F0 S Pedersen Rd. (24E2044-06)   Field Parameters Temperature, field General Parameters Turbidity Microbiological Parameters	Matrix: Ground Water  8.1  < 0.10	<b>Sampled: 2024-0</b> 5 AO ≤ 15 OG < 1	0.10	NTU	2024-05-17	HT1
94F0 S Pedersen Rd. (24E2044-06)   Field Parameters Temperature, field General Parameters Turbidity Microbiological Parameters Coliforms, Total	8.1 < 0.10 < 1	AO ≤ 15  OG < 1  MAC = 0	0.10 1 5	NTU CFU/100 mL	2024-05-17 2024-05-15	HT1
94F0 S Pedersen Rd. (24E2044-06)   Field Parameters Temperature, field General Parameters Turbidity Microbiological Parameters Coliforms, Total Heterotrophic Plate Count	8.1 < 0.10 < 1	AO ≤ 15  OG < 1  MAC = 0  N/A	0.10 1 5	NTU  CFU/100 mL  CFU/mL	2024-05-17 2024-05-15 2024-05-15	HT1





REPORTED TO	Quesnel, City of	WORK ORDER	24E2044
PROJECT	Bi-Weekly - First Week	REPORTED	2024-05-24 13:57

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
35D91 New Carson Pit (24E2044-07)	Matrix: Ground Wate	r   Sampled: 2024-	05-14 14:20			
Field Parameters						
Temperature, field	9.1	AO ≤ 15		°C	2024-05-14	
General Parameters						
Turbidity	0.17	OG < 1	0.10	NTU	2024-05-17	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-05-15	
Heterotrophic Plate Count	6	N/A	5	CFU/mL	2024-05-15	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-05-15	
Total Metals						
Manganese, total	0.188	MAC = 0.12	0.00020	mg/L	2024-05-24	
179CA S Dennis Rd. (24E2044-08)     Field Parameters Temperature, field	Matrix: Ground Water	<b>Sampled: 2024-05</b> AO ≤ 15	-14 13:30	°C	2024-05-14	
General Parameters						
Turbidity	1972 197			AUTU		
rurbialty	< 0.10	OG < 1	0.10	NIU	2024-05-17	
Microbiological Parameters	< 0.10	OG < 1	0.10	NIU	2024-05-17	
	< 0.10	OG < 1 MAC = 0		CFU/100 mL	2024-05-17	
Microbiological Parameters			1			HT1
Microbiological Parameters  Coliforms, Total	<1	MAC = 0	1 5	CFU/100 mL	2024-05-15	HT1
Microbiological Parameters  Coliforms, Total  Heterotrophic Plate Count	< 1 9	MAC = 0 N/A	1 5	CFU/100 mL CFU/mL	2024-05-15 2024-05-15	HT1

## Sample Qualifiers:

HT1 The sample was prepared and/or analyzed past the recommended holding time.

HT3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.



# APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO

Quesnel, City of

PROJECT

Bi-Weekly - First Week

WORK ORDER

24E2044

REPORTED

2024-05-24 13:57

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
Heterotrophic Plate Count in Water	SM 9215 D (2022)	Membrane Filtration / Membrane Filtration	1	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	<b>~</b>	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	1	Kelowna

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

#### Glossary of Terms:

RL Reporting Limit (default)

Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres
CFU/mL Colony Forming Units per millilitre

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

NTU Nephelometric Turbidity Units
OG Operational Guideline (treated water)

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

#### **General Comments:**

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# CERTIFICATE OF ANALYSIS

REPORTED TO C

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

Bi-Weekly - First Week

ATTENTION

Joe Law

WORK ORDER

24F1525

PO NUMBER

PROJECT PROJECT INFO RECEIVED / TEMP

2024-06-12 14:48 / 13.1°C

REPORTED

2024-06-19 14:17

**COC NUMBER** 

No Number

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Authorized By:

Brent Whitehead Account Manager M undbed

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Quesnel, City of Bi-Weekly - First Week				WORK ORDER REPORTED	24F1525 2024-06-1	9 14:17
	Result	Guideline	RL	Units	Analyzed	Qualifie
-1525-01)   Matrix: Ground	d Water   Samp	oled: 2024-06-11 09	:30			
	9.7	AO ≤ 15		°C	2024-06-11	
	0.12	OG < 1	0.10	NTU	2024-06-13	
meters						
motors	c 1	MAC = 0	1	CELV100 ml	2024-06-12	НТ3
Count	< 5					HT1
P. C.	< 1	MAC = 0			2024-06-12	НТ3
				7-11-		
	0.0947	MAC = 0.12	0.00020	ma/l	2024-06-15	
	9.8	AO ≤ 15		°C	2024-06-11	
	9.8	AO ≤ 15		°C	2024-06-11	
	< 0.10	OG < 1	0.10	NTU	2024-06-13	
meters						
	< 1	MAC = 0	1	CFU/100 mL	2024-06-12	
Count	< 5	N/A	5	CFU/mL	2024-06-12	HT1
	< 1	MAC = 0	1	CFU/100 mL	2024-06-12	
	0.00473	MAC = 0.12	0.00020	mg/L	2024-06-15	
24F1525-03)   Matrix: Gro	und Water   Sa	mpled: 2024-06-11	10:10			
	10.2	AO ≤ 15		°C	2024-06-11	
	0.14	OG < 1	0.10	NTU	2024-06-13	
meters	****	- 9/4/400 - 0.000		1000		
	- 1	MAC = 0	4	CELI/100 ml	2024-06-12	
Count						HT1
- Count	< 1	MAC = 0		CFU/100 mL	2024-06-12	1311
	Bi-Weekly - First Week  F1525-01)   Matrix: Ground  meters  Count  meters  Count  Count	Result	Result   Guideline	Result   Guideline   RL	Result   Guideline   RL   Units	Result   Guideline   RL   Units   Analyzed



REPORTED TO

Quesnel, City of

PROJECT

Bi-Weekly - First Week

WORK ORDER

24F1525

REPORTED

2024-06-19 14:17

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
94E8 S Graham Ave. (24F1525-04)   I	Matrix: Ground Water	Sampled: 2024-06	-11 13:50			
Field Parameters						
Temperature, field	10.6	AO ≤ 15		°C	2024-06-11	
General Parameters						
Turbidity	0.14	OG < 1	0.10	NTU	2024-06-13	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-06-12	
Heterotrophic Plate Count	5	N/A	- A	CFU/mL	2024-06-12	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-06-12	
Total Metals						
Manganese, total	0.0260	MAC = 0.12	0.00020	mg/L	2024-06-15	
94E9 S West Fraser Rd. (24F1525-05	5)   Matrix: Ground Wat	er   Sampled: 2024	I-06-11 11:00			
Field Parameters						
Temperature, field	10.4	AO ≤ 15		°C	2024-06-11	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-06-13	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-06-12	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-06-12	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-06-12	
Total Metals						
Manganese, total	0.00473	MAC = 0.12	0.00020	mg/L	2024-06-15	
94F0 S Pedersen Rd. (24F1525-06)	Metrice Cround Weter	I Sampled: 2024 0				
Field Parameters	matrix. Ground water	Campied. 2024-0	V-11 14.40			
Temperature, field	10.4	AO ≤ 15		°C	2024-06-11	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	4	CFU/100 mL	2024-06-12	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-06-12	HT1
E. coli	<1	MAC = 0		CFU/100 mL	2024-06-12	7111
Total Metals						

35D91 New Carson Pit (24F1525-07) | Matrix: Ground Water | Sampled: 2024-06-11 13:00



REPORTED TO

Quesnel, City of

**PROJECT** 

Bi-Weekly - First Week

WORK ORDER

24F1525

REPORTED

2024-06-19 14:17

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
35D91 New Carson Pit (24F1525-07)	Matrix: Ground Water	r   Sampled: 2024-	06-11 13:00,	Continued		
Field Parameters, Continued						
Temperature, field	9.9	AO ≤ 15		°C	2024-06-11	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-06-12	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-06-12	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-06-12	
Total Metals						
Manganese, total	0.0185	MAC = 0.12	0.00020	mg/L	2024-06-15	
	S. P. Lee, S. C. Lee, L. Martin, S. Lee, L. Le					
***	Matrix: Ground Water   10.2	<b>Sampled: 2024-06</b> AO ≤ 15	-11 13:40	°C	2024-06-11	
Field Parameters  Temperature, field			-11 13:40	°C	2024-06-11	
Field Parameters  Temperature, field			<b>-11 13:40</b>	°C CFU/100 mL	2024-06-11	
Microbiological Parameters	10.2	AO ≤ 15	1			HT1
Field Parameters  Temperature, field  Microbiological Parameters  Coliforms, Total	10.2	AO ≤ 15 MAC = 0	1 5	CFU/100 mL	2024-06-12	HT1
Field Parameters Temperature, field  Microbiological Parameters  Coliforms, Total  Heterotrophic Plate Count	10.2 < 1 < 5	AO ≤ 15 MAC = 0 N/A	1 5	CFU/100 mL CFU/mL	2024-06-12 2024-06-12	HT1

## Sample Qualifiers:

HT1 The sample was prepared and/or analyzed past the recommended holding time.

HT3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.



## APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO

Quesnel, City of

**PROJECT** 

Bi-Weekly - First Week

WORK ORDER

24F1525

REPORTED

2024-06-19 14:17

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	<b>✓</b>	Kelowna
Heterotrophic Plate Count in Water	SM 9215 D (2022)	Membrane Filtration / Membrane Filtration	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	1	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	1	Kelowna

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

#### Glossary of Terms:

RL Reporting Limit (default)

Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius Aesthetic Objective AO

CFU/100 mL Colony Forming Units per 100 millilitres CFU/mL Colony Forming Units per millilitre

Maximum Acceptable Concentration (health based) MAC

Milligrams per litre mg/L

NTU Nephelometric Turbidity Units OG Operational Guideline (treated water)

**EPA** United States Environmental Protection Agency Test Methods

Standard Methods for the Examination of Water and Wastewater, American Public Health Association SM

#### **General Comments:**

The results in this report apply to the received samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Caro will dispose of all samples within 30 days of sample receipt, unless otherwise agreed. The quality control (QC) data is available upon request

Results in Bold indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted red. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do not take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager:bwhitehead@caro.ca

Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline (s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability or responsibility for any loss attributed from the use of these guidelines in any way.



## **CERTIFICATE OF ANALYSIS**

REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

PO NUMBER

PROJECT

Bi-Weekly - First Week

PROJECT INFO

WORK ORDER

24H1030

RECEIVED / TEMP

2024-08-08 14:39 / 9.1°C

REPORTED

2024-08-15 13:58

COC NUMBER

No Number

## Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks



We've Got Chemistry



Ahead of the Curve



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: https://www.caro.ca/terms-conditions

If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead Account Manager M undbud

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REPORTED TO Quesnel, City of PROJECT Bi-Weekly - First Weel	<b>(</b>			WORK ORDER REPORTED	24H1030 2024-08-1	5 13:58
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
94E4 S Airport (24H1030-01)   Matrix: Gr	ound Water   Samp	oled: 2024-08-07 09	:30			
Field Parameters						
Temperature, field	9.8	AO ≤ 15		°C	2024-08-07	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-08-09	
Microbiological Parameters					223 0 2 24 24 25 25 2	
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-08-09	НТ3
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-08-08	HT1
E. coli	< 1	MAC = 0		CFU/100 mL	2024-08-09	нтз
Total Metals						
Manganese, total	0.00170	MAC = 0.12	0.00020	ma/l	2024-08-11	
3000 <b>X</b> 300 TTT 1 3 TTT				J -		
94E5 S Mills Rd. (24H1030-02)   Matrix: 0	Ground Water   San	mpled: 2024-08-07	10:00			
Field Parameters						
Temperature, field	10.8	AO ≤ 15		°C	2024-08-07	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-08-09	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-08-09	НТ3
Background Colonies	>200	N/A	200	CFU/100 mL	2024-08-09	HT3
Heterotrophic Plate Count	5	N/A	5	CFU/mL	2024-08-08	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-08-09	НТЗ
Total Metals						
Manganese, total	0.00986	MAC = 0.12	0.00020	mg/L	2024-08-11	
94E7 S Marsh Dr. (24H1030-03)   Matrix:	Ground Water   Sa	mpled: 2024-08-07	11:00			
Field Parameters					I de la	
Temperature, field	14.0	AO ≤ 15		°C	2024-08-07	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-08-09	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-08-09	НТ3
Heterotrophic Plate Count	5	N/A	5	CFU/mL	2024-08-08	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-08-09	HT3
Total Metals						



REPORTED TO

Quesnel, City of

PROJECT

Bi-Weekly - First Week

WORK ORDER

24H1030

REPORTED

2024-08-15 13:58

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
94E8 S Graham Ave. (24H1030-04)   M	atrix: Ground Water	Sampled: 2024-08	-07 13:30			
Field Parameters						
Temperature, field	13.3	AO ≤ 15		°C	2024-08-07	
General Parameters						
Turbidity	0.13	OG < 1	0.10	NTU	2024-08-09	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-08-09	НТ3
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-08-08	HT1
E. coli	< 1	MAC = 0		CFU/100 mL	2024-08-09	НТ3
Total Metals						
Manganese, total	0.0704	MAC = 0.12	0.00020	mg/L	2024-08-11	
94E9 S West Fraser Rd. (24H1030-05)  Field Parameters	6 3 W. S.	2 - C. Marco - Const. (1977)				
Field Parameters						
Temperature, field	14.7	AO ≤ 15		°C	2024-08-07	
General Parameters						
Turbidity	0.14	OG < 1	0.10	NTU	2024-08-09	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-08-09	HT3
Background Colonies	>200	N/A	200	CFU/100 mL	2024-08-09	HT3
	21	N/A	5	CFU/mL	2024-08-08	HT1
Heterotrophic Plate Count				CFU/100 mL	2024-08-09	HT3
Heterotrophic Plate Count E. coli	< 1	MAC = 0	1	S) 8033 104		1110
	<1	MAC = 0	1			
E. coli	< 1 0.00162	MAC = 0 MAC = 0.12	0.00020		2024-08-11	1110
E. coli  Total Metals  Manganese, total  94F0 S Pedersen Rd. (24H1030-06)   N	0.00162 Watrix: Ground Water	MAC = 0.12	0.00020	mg/L	2024-08-11	
E. coli  Total Metals  Manganese, total  94F0 S Pedersen Rd. (24H1030-06)   I	0.00162	MAC = 0.12	0.00020			
E. coli  Total Metals  Manganese, total  94F0 S Pedersen Rd. (24H1030-06)   N	0.00162 Watrix: Ground Water	MAC = 0.12    Sampled: 2024-0  AO ≤ 15	0.00020 8-07 1 <mark>4:00</mark>	mg/L °C	2024-08-11	
E. coli  Total Metals  Manganese, total  94F0 S Pedersen Rd. (24H1030-06)   Field Parameters  Temperature, field	0.00162 Watrix: Ground Water	MAC = 0.12	0.00020 8-07 1 <mark>4:00</mark>	mg/L	2024-08-11	
E. coli  Total Metals  Manganese, total  94F0 S Pedersen Rd. (24H1030-06)   N  Field Parameters  Temperature, field  General Parameters	0.00162 Matrix: Ground Water 12.5	MAC = 0.12    Sampled: 2024-0  AO ≤ 15	0.00020 8-07 1 <mark>4:00</mark>	mg/L °C	2024-08-11	
E. coli  Total Metals  Manganese, total  94F0 S Pedersen Rd. (24H1030-06)   Field Parameters  Temperature, field  General Parameters  Turbidity	0.00162 Matrix: Ground Water 12.5	MAC = 0.12    Sampled: 2024-0  AO ≤ 15	0.00020 <b>8-07 14:00</b> 0.10	mg/L °C	2024-08-11	нтз
E. coli  Total Metals  Manganese, total  94F0 S Pedersen Rd. (24H1030-06)   N  Field Parameters  Temperature, field  General Parameters  Turbidity  Microbiological Parameters	0.00162 Matrix: Ground Water 12.5 0.11	MAC = 0.12    Sampled: 2024-0  AO ≤ 15  OG < 1	0.00020 <b>8-07 14:00</b> 0.10	mg/L °C NTU	2024-08-11 2024-08-07 2024-08-09	
E. coli  Total Metals  Manganese, total  94F0 S Pedersen Rd. (24H1030-06)   Filed Parameters  Temperature, field  General Parameters  Turbidity  Microbiological Parameters  Coliforms, Total	0.00162 Watrix: Ground Water 12.5 0.11	MAC = 0.12    Sampled: 2024-0  AO ≤ 15  OG < 1  MAC = 0	0.00020 <b>8-07 14:00</b> 0.10	mg/L  °C  NTU  CFU/100 mL	2024-08-11 2024-08-07 2024-08-09	НТЗ
E. coli  Total Metals  Manganese, total  94F0 S Pedersen Rd. (24H1030-06)   Field Parameters  Temperature, field  General Parameters  Turbidity  Microbiological Parameters  Coliforms, Total  Heterotrophic Plate Count	0.00162  Watrix: Ground Water  12.5  0.11  < 1  < 5	MAC = 0.12    Sampled: 2024-0  AO ≤ 15  OG < 1  MAC = 0  N/A	0.00020 <b>8-07 14:00</b> 0.10	mg/L  °C  NTU  CFU/100 mL  CFU/mL	2024-08-07 2024-08-09 2024-08-09 2024-08-08	HT3 HT1





REPORTED TO	Quesnel, City of	WORK ORDER	24H1030
PROJECT	Bi-Weekly - First Week	REPORTED	2024-08-15 13:58

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
35D91 New Carson Pit (24H1030-07	)   Matrix: Ground Wate	r   Sampled: 2024-	08-07 15:00			
Field Parameters					P. Carlo	
Temperature, field	15.0	AO ≤ 15		°C	2024-08-07	
General Parameters						
Turbidity	0.11	OG < 1	0.10	NTU	2024-08-09	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-08-09	НТ3
Heterotrophic Plate Count	12	N/A	5	CFU/mL	2024-08-08	HT1
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-08-09	НТ3
Total Metals						
Manganese, total	0.00632	MAC = 0.12	0.00020	mg/L	2024-08-12	
179CA S Dennis Rd. (24H1030-08)    Field Parameters  Temperature, field		Sampled: 2024-08	-07 14:30			
remperature, neid	12.1	AO ≤ 15		°C	2024-08-07	
	12.1	AO ≤ 15		°C	2024-08-07	
	0.64	AO ≤ 15 OG < 1	0.10	°C NTU	2024-08-07	
General Parameters			0.10			
General Parameters  Turbidity						НТ3
General Parameters  Turbidity  Microbiological Parameters	0.64	OG < 1	1	NTU	2024-08-09	HT3
General Parameters Turbidity Microbiological Parameters Coliforms, Total	0.64	OG < 1 MAC = 0	1 5	NTU CFU/100 mL	2024-08-09	
General Parameters Turbidity Microbiological Parameters Coliforms, Total Heterotrophic Plate Count	0.64 < 1 < 5	OG < 1  MAC = 0  N/A	1 5	NTU  CFU/100 mL  CFU/mL	2024-08-09 2024-08-09 2024-08-08	HT1

## Sample Qualifiers:

HT1 The sample was prepared and/or analyzed past the recommended holding time.

HT3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.



## APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT

Quesnel, City of

Bi-Weekly - First Week

WORK ORDER

24H1030

REPORTED

2024-08-15 13:58

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Heterotrophic Plate Count in Water	SM 9215 D (2022)	Membrane Filtration / Membrane Filtration	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	1	Kelowna

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

## Glossary of Terms:

RL Reporting Limit (default)

< Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

>2 Greater than the specified Result

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres
CFU/mL Colony Forming Units per millilitre

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

NTU Nephelometric Turbidity Units
OG Operational Guideline (treated water)

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

## **General Comments:**

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## CERTIFICATE OF ANALYSIS



Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

PO NUMBER

PROJECT

Bi-Weekly - First Week

**PROJECT INFO** 

WORK ORDER

2410448

RECEIVED / TEMP

2024-09-05 13:23 / 4.4°C

REPORTED COC NUMBER

2024-09-12 12:30

No Number

#### Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks



We've Got Chemistry



Ahead of the Curve



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

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If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead Account Manager M undbud

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Quesnel, City of

## **TEST RESULTS**

Heterotrophic Plate Count

E. coli

**Total Metals** 

Manganese, total

REPORTED TO

PROJECT Bi-Weekly - First V	Veek			REPORTED	2024-09-1	2 12:30
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
94E4 S Airport (24I0448-01)   Matrix:	Ground Water   Sampl	ed: 2024-09-04 09:	10			
Field Parameters						
Temperature, field	16.0	AO ≤ 15		°C	2024-09-04	
General Parameters						
Turbidity	0.20	OG < 1	0.10	NTU	2024-09-06	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-09-05	НТ3
Heterotrophic Plate Count	5	N/A		CFU/mL	2024-09-05	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-09-05	НТ3
Total Metals						
Manganese, total	0.00171	MAC = 0.12	0.00020	mg/L	2024-09-09	
Temperature, field	14.0	AO ≤ 15		°C	2024-09-04	
Field Parameters						
Temperature, field	14.0	AO ≤ 15		°C	2024-09-04	
General Parameters						
Turbidity	0.12	OG < 1	0.10	NTU	2024-09-06	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-09-05	HT3
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-09-05	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-09-05	HT3
Total Metals						
Manganese, total	0.00527	MAC = 0.12	0.00020	mg/L	2024-09-09	
94E7 S Marsh Dr. (24I0448-03)   Matr Field Parameters Temperature, field	ix: Ground Water   Sar	npled: <b>2024-09-04</b> AO ≤ 15	10:00	°C	2024-09-04	
General Parameters						
Turbidity	0.11	OG < 1	0.10	NTU	2024-09-06	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-09-05	
		4114				767-1

**WORK ORDER** 

2410448

HT1

2024-09-05

2024-09-05

2024-09-09

N/A

MAC = 0

MAC = 0.12

5 CFU/mL

0.00020 mg/L

1 CFU/100 mL

< 1

0.00372

5



REPORTED TO PROJECT

Quesnel, City of

Bi-Weekly - First Week

WORK ORDER REPORTED 2410448

2024-09-12 12:30

El-Weekly - 1 list v	VCCR			ILLI OILILD	202.00.	
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
94E8 S Graham Ave. (24I0448-04)   N	latrix: Ground Water	Sampled: 2024-09-	04 10:25			
Field Parameters						
Temperature, field	11.0	AO ≤ 15		°C	2024-09-04	
General Parameters						
Turbidity	0.28	OG < 1	0.10	NTU	2024-09-06	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-09-05	
Heterotrophic Plate Count	11	N/A	5	CFU/mL	2024-09-05	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-09-05	
Total Metals						
Manganese, total	0.171	MAC = 0.12	0.00020	ma/L	2024-09-09	
Field Parameters	450	AO < 15		°C	2024 00 04	
Temperature, field	15.0	AO ≤ 15		°C	2024-09-04	
General Parameters						
Turbidity	0.12	OG < 1	0.10	NTU	2024-09-06	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-09-05	
Heterotrophic Plate Count	8	N/A	5	CFU/mL	2024-09-05	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-09-05	
Total Metals						
Manganese, total	0.00691	MAC = 0.12	0.00020	mg/L	2024-09-09	
94F0 S Pedersen Rd. (24I0448-06)   Field Parameters Temperature, field	Matrix: Ground Water	Sampled: 2024-09  AO ≤ 15	-04 13:15	°C	2024-09-04	
General Parameters						
Turbidity	0.15	OG < 1	0.10	NTU	2024-09-06	
Microbiological Parameters	5775					
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-09-05	
Heterotrophic Plate Count	8	N/A		CFU/mL	2024-09-05	HT1
E. coli	< 1	MAC = 0		CFU/100 mL	2024-09-05	2213
Total Metals				and the second second	3000 3000	
	0.0204	MAC = 0.12	0.00020	ma/l	2024-09-09	
Manganese, total	0.0281	MAC = 0.12	0.00020	mg/L	2024-03-03	





REPORTED TO

Quesnel, City of

**PROJECT** 

Bi-Weekly - First Week

WORK ORDER

2410448

REPORTED

2024-09-12 12:30

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
35D91 New Carson Pit (24l0448-07)	Matrix: Ground Water	Sampled: 2024-0	9-04 11:10			
Field Parameters						
Temperature, field	14.0	AO ≤ 15		°C	2024-09-04	
General Parameters						
Turbidity	0.16	OG < 1	0.10	NTU	2024-09-06	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-09-05	
Heterotrophic Plate Count	7	N/A	5	CFU/mL	2024-09-05	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-09-05	
Total Metals						
Manganese, total	0.00728	MAC = 0.12	0.00020	mg/L	2024-09-09	
179CA S Dennis Rd. (24l0448-08)   N				mg/L °C	2024-09-09	
179CA S Dennis Rd. (24I0448-08)   N Field Parameters Temperature, field	Matrix: Ground Water   \$	Sampled: 2024-09-				
179CA S Dennis Rd. (24I0448-08)   N Field Parameters Temperature, field	Matrix: Ground Water   \$	Sampled: 2024-09-	04 14:05			
179CA S Dennis Rd. (24I0448-08)   N Field Parameters Temperature, field General Parameters Turbidity	Matrix: Ground Water   \$	Sampled: <b>2024-09-</b> AO ≤ 15	04 14:05	°C	2024-09-04	
179CA S Dennis Rd. (24I0448-08)   N Field Parameters Temperature, field General Parameters Turbidity	Matrix: Ground Water   \$	Sampled: <b>2024-09-</b> AO ≤ 15	<b>04 14:05</b> 0.10	°C	2024-09-04	
179CA S Dennis Rd. (24l0448-08)   N Field Parameters Temperature, field General Parameters Turbidity Microbiological Parameters	Matrix: Ground Water   \$	AO ≤ 15  OG < 1	04 14:05 0.10	°C NTU	2024-09-04	HT1
179CA S Dennis Rd. (24I0448-08)   N Field Parameters Temperature, field General Parameters Turbidity Microbiological Parameters Coliforms, Total	13.0 0.26	AO ≤ 15  OG < 1  MAC = 0	0.10 1 5	°C  NTU  CFU/100 mL	2024-09-04 2024-09-06 2024-09-05	HT1
179CA S Dennis Rd. (24I0448-08)   N Field Parameters Temperature, field General Parameters Turbidity Microbiological Parameters Coliforms, Total Heterotrophic Plate Count	13.0 0.26	AO ≤ 15  OG < 1  MAC = 0  N/A	0.10 1 5	°C  NTU  CFU/100 mL  CFU/mL	2024-09-04 2024-09-06 2024-09-05 2024-09-05	HT1

## Sample Qualifiers:

HT1 The sample was prepared and/or analyzed past the recommended holding time.

HT3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.



## APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT

Quesnel, City of

Bi-Weekly - First Week

WORK ORDER

2410448

REPORTED

2024-09-12 12:30

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
Heterotrophic Plate Count in Water	SM 9215 D (2022)	Membrane Filtration / Membrane Filtration	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	1	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	1	Kelowna

Glossary of Terms:

RL Reporting Limit (default)

Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres
CFU/mL Colony Forming Units per millilitre

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

NTU Nephelometric Turbidity Units
OG Operational Guideline (treated water)

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

#### General Comments:

The results in this report apply to the received samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Caro will dispose of all samples within 30 days of sample receipt, unless otherwise agreed. The quality control (QC) data is available upon request

Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted red. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do not take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager:bwhitehead@caro.ca

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## CERTIFICATE OF ANALYSIS



Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

PO NUMBER

**PROJECT** 

Bi-Weekly - First Week

**PROJECT INFO** 

WORK ORDER

24K0095

RECEIVED / TEMP

2024-11-01 13:17 / 7.1°C

REPORTED

2024-11-06 10:50

**COC NUMBER** No Number

#### Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts, CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

## Big Picture Sidekicks



We've Got Chemistry



Ahead of the Curve



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Through research, regulation knowledge, and instrumentation, are your analytical centre for knowledge technical you BEFORE you need it, so you can stay up to date and in the know.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: https://www.caro.ca/terms-conditions

If you have any questions or concerns, please contact me at hhannaoui@caro.ca

Authorized By:

Hanane El Hannaoui Junior Account Manager

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						Version Elsy	A.
REPORTED TO PROJECT	Quesnel, City of Bi-Weekly - First Week				WORK ORDER REPORTED	24K0095 2024-11-0	6 10:50
Analyte		Result	Guideline	RL	Units	Analyzed	Qualific
94E4 S Airport (24	4K0095-01)   Matrix: Groun	d Water   Samp	oled: 2024-10-31 10	0:00			
Field Parameters							
Temperature, field		12.2	AO ≤ 15		°C	2024-10-31	
General Parameters	5						
Turbidity		< 0.10	OG < 1	0.10	NTU	2024-11-01	
Microbiological Par	ramotors						
	ameters	- 4	MAC - 0	4	CELI/400	2024 11 01	
Coliforms, Total Heterotrophic Plate	Count	< 1 < 5	MAC = 0 N/A		CFU/100 mL	2024-11-01	HT1
E. coli	e Count	< 1	MAC = 0		CFU/100 mL	2024-11-01	1111
Total Metals							
Manganese, total		0.00137	MAC = 0.12	0.00020	ma/l	2024-11-05	
	(24K0095-02)   Matrix: Grou	ınd Water   Sar	npled: 2024-10-31	10:30			
Field Parameters			4.61-4.62				
Temperature, field		12.2	AO ≤ 15		°C	2024-10-31	
General Parameters	s						
Turbidity		< 0.10	OG < 1	0.10	NTU	2024-11-01	
Microbiological Par	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-11-01	
Heterotrophic Plate	e Count	< 5	N/A	5	CFU/mL	2024-11-01	HT1
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-11-01	
Total Metals							
Manganese, total		0.00336	MAC = 0.12	0.00020	mg/L	2024-11-05	
94E7 S Marsh Dr.	(24K0095-03)   Matrix: Gro	und Water   Sa	mpled: 2024-10-31	11:00			
Field Parameters							
Temperature, field	<u> </u>	10.6	AO ≤ 15		°C	2024-10-31	
General Parameters	s						
Turbidity		< 0.10	OG < 1	0.10	NTU	2024-11-01	
Microbiological Par	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-11-01	
Heterotrophic Plate	e Count	< 5	N/A		CFU/mL	2024-11-01	HT1
E. coli	0.000,000,000,000	< 1	MAC = 0		CFU/100 mL	2024-11-01	505. V
Total Metals							
Manganese, total		0.00694	MAC = 0.12	0.00020	ma/l	2024-11-05	
wanganese, wal		0.00094	WIAC - U.12	0.00020	mgrL	2024-11-03	



REPORTED TO

Quesnel, City of

Bi-Weekly - First Week

WORK ORDER

24K0095

2024-11-06 10:50

PROJECT Bi-Weekly - First V	Veek			REPORTED	2024-11-0	6 10:50
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
94E8 S Graham Ave. (24K0095-04)   I	Matrix: Ground Water	Sampled: 2024-10	-31 13:15			
Field Parameters						
Temperature, field	11.3	AO ≤ 15		°C	2024-10-31	
General Parameters						
Turbidity	0.19	OG < 1	0.10	NTU	2024-11-01	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-11-01	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-11-01	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-11-01	
Total Metals						
Manganese, total	0.0328	MAC = 0.12	0.00020	mg/L	2024-11-05	
Field Parameters	44.5	AO < 15		°C	2024 10 24	
Temperature, field	11.5	AO ≤ 15		°C	2024-10-31	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-11-01	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-11-01	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-11-01	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-11-01	
Total Metals						
Manganese, total	0.00492	MAC = 0.12	0.00020	mg/L	2024-11-05	
94F0 S Pedersen Rd. (24K0095-06)   Field Parameters		A COLUMN TO STATE OF THE STATE	0-31 14:30	°C	2024 10 21	
Temperature, field	12.1	AO ≤ 15		°C	2024-10-31	
General Parameters	2.0	004	0.10	NITH	2024 44 64	
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-11-01	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0		CFU/100 mL	2024-11-01	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-11-01	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-11-01	
Total Metals  Manganese, total	0.0853	MAC = 0.12	0.00020	mg/L	2024-11-05	





REPORTED TO

Quesnel, City of

**PROJECT** 

Bi-Weekly - First Week

WORK ORDER

24K0095

REPORTED

2024-11-06 10:50

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
35D91 New Carson Pit (24K0095-07)	)   Matrix: Ground Wate	r   Sampled: 2024-	10-31 13:15			
Field Parameters						
Temperature, field	10.3	AO ≤ 15		°C	2024-10-31	
General Parameters						
Turbidity	0.11	OG < 1	0.10	NTU	2024-11-01	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-11-01	
Heterotrophic Plate Count	23	N/A	5	CFU/mL	2024-11-01	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-11-01	
Total Metals						
Manganese, total	0.0101	MAC = 0.12	0.00020	mg/L	2024-11-05	
179CA S Dennis Rd. (24K0095-08)	Matrix: Ground Water	Sampled: 2024-10	-31 15:00			
Field Parameters  Temperature, field	11.5	AO ≤ 15		°C	2024-10-31	
Field Parameters  Temperature, field  General Parameters	11.5	AO ≤ 15		°C	2024-10-31	
Temperature, field	11.5 < 0.10	AO ≤ 15 OG < 1	0.10	°C NTU	2024-10-31	
Temperature, field  General Parameters			0.10			
Temperature, field  General Parameters  Turbidity						
Temperature, field  General Parameters  Turbidity  Microbiological Parameters	< 0.10	OG < 1	1	NTU	2024-11-01	
Temperature, field  General Parameters  Turbidity  Microbiological Parameters  Coliforms, Total	< 0.10	OG < 1 MAC = 0	1 5	NTU CFU/100 mL	2024-11-01	
Temperature, field  General Parameters  Turbidity  Microbiological Parameters  Coliforms, Total  Heterotrophic Plate Count	< 0.10 < 1 < 5	OG < 1 MAC = 0 N/A	1 5	NTU  CFU/100 mL  CFU/mL	2024-11-01 2024-11-01 2024-11-01	

## Sample Qualifiers:

HT1 The sample was prepared and/or analyzed past the recommended holding time.





## APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO

Quesnel, City of

PROJECT Bi-Weekly - First Week

WORK ORDER

24K0095

REPORTED 2024-11-06 10:50

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	<b>✓</b>	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Heterotrophic Plate Count in Water	SM 9215 D (2022)	Membrane Filtration / Membrane Filtration	<b>√</b>	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	✓	Kelowna

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

## Glossary of Terms:

RL Reporting Limit (default)

< Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres
CFU/mL Colony Forming Units per millilitre

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

NTU Nephelometric Turbidity Units
OG Operational Guideline (treated water)

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

#### **General Comments:**

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## **CERTIFICATE OF ANALYSIS**



Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

PO NUMBER

PROJECT

Bi-Weekly - First Week

PROJECT INFO

WORK ORDER

REPORTED

**COC NUMBER** 

24K3171

RECEIVED / TEMP

2024-11-27 14:34 / 6.1°C

2024-12-03 11:33

No Number

#### Introduction:

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Authorized By:

Hanane El Hannaoui Junior Account Manager FIG

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REPORTED TO Quesnel, City of PROJECT Guesnel, City of Bi-Weekly - First Week

WORK ORDER REPORTED 24K3171 2024-12-03 11:33

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
94E4 S Airport (24K3171-01)   Matrix	: Ground Water   Samp	oled: 2024-11-26 09	):15			
Field Parameters						
Temperature, field	8.0	AO ≤ 15		°C	2024-11-26	
General Parameters						
Turbidity	1.33	OG < 1	0.10	NTU	2024-11-29	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-11-27	НТ3
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-11-27	HT1
E. coli	< 1	MAC = 0		CFU/100 mL	2024-11-27	HT3
Total Metals						
Manganese, total	0.472	MAC = 0.12	0.00020	mg/L	2024-12-02	
94E5 S Mills Rd. (24K3171-02)   Matr	ix: Ground Water   San	npled: 2024-11-26	11:40			
Field Parameters						
Temperature, field	10.0	AO ≤ 15		°C	2024-11-26	
General Parameters						
Turbidity	0.16	OG < 1	0.10	NTU	2024-11-29	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-11-27	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-11-27	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-11-27	
Total Metals						
Manganese, total	0.00308	MAC = 0.12	0.00020	mg/L	2024-12-02	
94E7 S Marsh Dr. (24K3171-03)   Mat	rix: Ground Water   Sa	mpled: 2024-11-26	09:40			
Field Parameters						
Temperature, field	9.0	AO ≤ 15		°C	2024-11-26	
General Parameters						
Turbidity	0.11	OG < 1	0.10	NTU	2024-11-29	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-11-27	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-11-27	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-11-27	
Total Metals						



REPORTED TO PROJECT

Quesnel, City of

Bi-Weekly - First Week

WORK ORDER REPORTED 24K3171 2024-12-03 11:33

veek			REPORTED	2024-12-0	3 11.33
Result	Guideline	RL	Units	Analyzed	Qualifie
Matrix: Ground Water	Sampled: 2024-11	-26 11:15			
9.0	AO ≤ 15		°C	2024-11-26	
0.22	OG < 1	0.10	NTU	2024-11-29	
< 1	MAC = 0	1	CFU/100 mL	2024-11-27	
< 5	N/A	5	CFU/mL	2024-11-27	HT1
< 1	MAC = 0	1	CFU/100 mL	2024-11-27	
0.0420	MAC = 0.12	0.00020	mg/L	2024-12-02	
9.0	AO ≤ 15		°C	2024-11-26	
9.0	AO ≤ 15		°C	2024-11-26	
0.20	OG < 1	0.10	NTU	2024-11-29	
< 1	MAC = 0	1	CFU/100 mL	2024-11-27	
25	N/A	5	CFU/mL	2024-11-27	HT1
< 1	MAC = 0	1	CFU/100 mL	2024-11-27	
0.0122	MAC = 0.12	0.00020	mg/L	2024-12-02	
Matrix: Ground Wate	er   Sampled: 2024-	11-26 13:10			
9.0	AO ≤ 15		°C	2024-11-26	
0.16	OG < 1	0.10	NTU	2024-11-29	
< 1	MAC = 0	1	CFU/100 mL	2024-11-27	
< 5	N/A			2024-11-27	HT1
< 1	MAC = 0	1	CFU/100 mL	2024-11-27	
	9.0  0.22  < 1	Result   Guideline	Result       Guideline       RL         Matrix: Ground Water   Sampled: 2024-11-26 11:15       9.0       AO ≤ 15         9.0       AO ≤ 15       0.22       OG < 1	Result         Guideline         RL         Units           Matrix: Ground Water   Sampled: 2024-11-26 11:15         °C           9.0         AO ≤ 15         °C           0.22         OG < 1	Result         Guideline         RL         Units         Analyzed           Matrix: Ground Water   Sampled: 2024-11-26 11:15           9,0         AO ≤ 15         °C         2024-11-26           0,22         OG < 1





REPORTED TO

Quesnel, City of

**PROJECT** 

Bi-Weekly - First Week

WORK ORDER

24K3171

REPORTED

2024-12-03 11:33

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
179CA S Dennis Rd. (24K3171-07)   I	Matrix: Ground Water	Sampled: 2024-11	-26 10:45			
Field Parameters						
Temperature, field	8.0	AO ≤ 15		°C	2024-11-26	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-11-29	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-11-27	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-11-27	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-11-27	
Total Metals						
Manganese, total	0.165	MAC = 0.12	0.00020	mg/L	2024-12-02	

## Sample Qualifiers:

HT1 The sample was prepared and/or analyzed past the recommended holding time.

HT3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.





REPORTED TO PROJECT

Quesnel, City of

Bi-Weekly - First Week

WORK ORDER

24K3171

REPORTED 2024-12-03 11:33

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	<b>√</b>	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
Heterotrophic Plate Count in Water	SM 9215 D (2022)	Membrane Filtration / Membrane Filtration	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	1	Kelowna

#### Glossary of Terms:

RL Reporting Limit (default)

< Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres
CFU/mL Colony Forming Units per millilitre

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

NTU Nephelometric Turbidity Units
OG Operational Guideline (treated water)

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

## **General Comments:**

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## CERTIFICATE OF ANALYSIS

REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

PO NUMBER

PROJECT Bi-

Bi-Weekly - Third Week

PROJECT INFO

WORK ORDER

24A1125

RECEIVED / TEMP

2024-01-11 14:09 / 1.8°C

REPORTED COC NUMBER

2024-01-17 11:21

No Number

#### Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

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You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

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If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead Account Manager M unshind

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REPORTED TO Quesnel, City of Bi-Weekly - Third Week				WORK ORDER REPORTED	24A1125 2024-01-1	7 11:21
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94E6 - S-Carradice Rd. (24A1125-01)   N	Matrix: Water	Sampled: 2024-01-	10 09:20			
Field Parameters						
Temperature, field	4.7	AO ≤ 15		°C	2024-01-10	
General Parameters						
Turbidity	0.37	OG < 1	0.10	NTU	2024-01-12	
Microbiological Parameters	37.075					
	- 1	MAC = 0	1	CELI/100 ml	2024 01 11	ЦΤ2
Coliforms, Total Heterotrophic Plate Count	< 1 < 5	N/A		CFU/100 mL	2024-01-11	HT3
E. coli	< 1	MAC = 0	- 17	CFU/100 mL	2024-01-11	HT3
Total Metals		343727-35		- construct south		
Manganese, total	0.197	MAC = 0.12	0.00020	ma/l	2024-01-14	
WT# 94F1 - S-Dixon St. (24A1125-02)   Matrix	x: Water   Samp	oled: 2024-01-10 10	):15			
Field Parameters						
Temperature, field	7.3	AO ≤ 15		°C	2024-01-10	
General Parameters						
Turbidity	0.36	OG < 1	0.10	NTU	2024-01-12	
Microbiological Parameters						
	- 44	MAG = 0	4	OFILI400!	2024 04 44	LITO
Coliforms, Total	< 1 < 5	MAC = 0 N/A		CFU/100 mL CFU/mL	2024-01-11	HT3
Heterotrophic Plate Count  E. coli	<1	MAC = 0		CFU/100 mL	2024-01-11	HT1
Software des		111110	·	01 0/100 III.E	2024 01 11	1110
Total Metals	11112					
Manganese, total	0.0237	MAC = 0.12	0.00020	mg/L	2024-01-14	
WT# 94F2 - S-Hospital (24A1125-03)   Matrix	: Water   Samp	led: 2024-01-10 10	:00			
Field Parameters						
Temperature, field	7.1	AO ≤ 15		°C	2024-01-10	
General Parameters						
Turbidity	0.31	OG < 1	0.10	NTU	2024-01-12	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-01-11	НТ3
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-01-11	HT1
E. coli	< 1	MAC = 0		CFU/100 mL	2024-01-11	НТ3
Total Metals						
	0.400	MAC = 0.12	0.00000	ma/l	2024 04 44	
Manganese, total	0.186	MAC = 0.12	0.00020	mg/L	2024-01-14	



			79400		rd .	
REPORTED TO Quesnel, City of Bi-Weekly - Third Week				WORK ORDER REPORTED	24A1125 2024-01-1	7 11:21
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94F3 - S-Nason St. (24A1125-04)   Matri	ix: Water   Sam	pled: 2024-01-10 1	1:00			
Field Parameters						
Temperature, field	7.2	AO ≤ 15		°C	2024-01-10	
General Parameters						
Turbidity	0.20	OG < 1	0.10	NTU	2024-01-12	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-01-11	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-01-11	HT1
E. coli	< 1	MAC = 0		CFU/100 mL	2024-01-11	
Total Metals						
Manganese, total	0.125	MAC = 0.12	0.00020	ma/l	2024-01-14	
WT# 94F4 - S-N Star Dragon Hill (24A1125-0	5)   Matrix: Wat	er   Sampled: 2024	1-01-10 14:00			
Field Parameters		10 - 15		°C	2024-01-10	
Temperature, field	7.2	AO ≤ 15		C	2024-01-10	
General Parameters						
Turbidity	0.16	OG < 1	0.10	NTU	2024-01-12	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-01-11	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-01-11	HT1
E. coli	< 1	MAC = 0	.1	CFU/100 mL	2024-01-11	
Total Metals						
Manganese, total	0.125	MAC = 0.12	0.00020	mg/L	2024-01-14	
WT# 94F6 - S-N Star South Hill (24A1125-06	6)   Matrix: Wate	er   Sampled: 2024-	01-10 14:30			
Field Parameters						
Temperature, field	7.4	AO ≤ 15		°C	2024-01-10	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-01-12	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-01-11	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-01-11	HT1
E. coli	< 1	MAC = 0		CFU/100 mL	2024-01-11	
Total Metals						
	0.450	MAC = 0.12	0.00000	ma/l	2024-01-14	
Manganese, total	0.150	MAC = 0.12	0.00020	mg/L	2024-01-14	



REPORTED TO	Quesnel, City of	WORK ORDER	24A1125
PROJECT	Bi-Weekly - Third Week	REPORTED	2024-01-17 11:21

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94F7 - S-Chew Rd. (24A1125-07	')   Matrix: Water   Sam	pled: 2024-01-10 1	3:20			
Field Parameters						
Temperature, field	8.3	AO ≤ 15		°C	2024-01-10	
General Parameters						
Turbidity	0.28	OG < 1	0.10	NTU	2024-01-12	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-01-11	
Heterotrophic Plate Count	89	N/A	5	CFU/mL	2024-01-11	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-01-11	
Total Metals						
Manganese, total	0.158	MAC = 0.12	0.00020	mg/L	2024-01-14	
Manganese, total  WT# 21D9B - Bulk Water Site 1 (24A)  Field Parameters  Temperature, field				mg/L °C	2024-01-14	
WT# 21D9B - Bulk Water Site 1 (24A	1125-08)   Matrix: Wate	r   Sampled: 2024-				
WT# 21D9B - Bulk Water Site 1 (24A Field Parameters Temperature, field	1125-08)   Matrix: Wate	r   Sampled: 2024-	01-10 11:30			
WT# 21D9B - Bulk Water Site 1 (24A Field Parameters Temperature, field General Parameters	1125-08)   Matrix: Wate	r   <b>Sampled: 2024-</b> AO ≤ 15	01-10 11:30	°C	2024-01-10	
WT# 21D9B - Bulk Water Site 1 (24A  Field Parameters  Temperature, field  General Parameters  Turbidity	1125-08)   Matrix: Wate	r   <b>Sampled: 2024-</b> AO ≤ 15	01-10 11:30	°C	2024-01-10	
WT# 21D9B - Bulk Water Site 1 (24A Field Parameters Temperature, field General Parameters Turbidity Microbiological Parameters	1125-08)   Matrix: Wate 7.1 0.15	r   <b>Sampled: 2024-</b> AO ≤ 15 OG < 1	01-10 11:30	°C NTU	2024-01-10	HT1
WT# 21D9B - Bulk Water Site 1 (24A  Field Parameters  Temperature, field  General Parameters  Turbidity  Microbiological Parameters  Coliforms, Total	1125-08)   Matrix: Wate 7.1 0.15	r   Sampled: 2024- AO ≤ 15 OG < 1 MAC = 0	01 <b>-10 11:30</b> 0.10  1 5	°C NTU CFU/100 mL	2024-01-10 2024-01-12 2024-01-11	HT1
WT# 21D9B - Bulk Water Site 1 (24A  Field Parameters  Temperature, field  General Parameters  Turbidity  Microbiological Parameters  Coliforms, Total  Heterotrophic Plate Count	7.1 0.15	AO ≤ 15  OG < 1  MAC = 0  N/A	01 <b>-10 11:30</b> 0.10  1 5	°C  NTU  CFU/100 mL  CFU/mL	2024-01-10 2024-01-12 2024-01-11 2024-01-11	HT1

## Sample Qualifiers:

HT1 The sample was prepared and/or analyzed past the recommended holding time.

HT3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.



## **APPENDIX 1: SUPPORTING INFORMATION**

REPORTED TO

Quesnel, City of

**PROJECT** 

Bi-Weekly - Third Week

WORK ORDER

24A1125

REPORTED

2024-01-17 11:21

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Heterotrophic Plate Count in Water	SM 9215 D (2022)	Membrane Filtration / Membrane Filtration	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCI Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	4	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	✓	Kelowna

### Glossary of Terms:

RL Reporting Limit (default)

Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres
CFU/mL Colony Forming Units per millilitre

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

NTU Nephelometric Turbidity Units
OG Operational Guideline (treated water)

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

ATTENTION

Joe Law

WORK ORDER

24B0769

PO NUMBER

PROJECT PROJECT INFO

Bi-Weekly - Third Week

RECEIVED / TEMP REPORTED 2024-02-07 14:03 / 6.6°C

REPORTED

2024-02-14 12:04

COC NUMBER

No Number

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Ahead of the Curve



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If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead Account Manager M unshired

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	Quesnel, City of Bi-Weekly - Third Week				WORK ORDER REPORTED	24B0769 2024-02-1	4 12:04
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94E6 - S-Carra	dice Rd. (24B0769-01)   N	/latrix: Water	Sampled: 2024-02-	06 10:15			
Field Parameters							
Temperature, field		6.7	AO ≤ 15		°C	2024-02-06	
General Parameters							
Turbidity		0.22	OG < 1	0.10	NTU	2024-02-08	
Microbiological Paran	neters						
Coliforms, Total		< 1	MAC = 0	4	CFU/100 mL	2024-02-07	НТ3
Heterotrophic Plate C	Count	< 5	N/A		CFU/mL	2024-02-07	HT1
E. coli	ar year	< 1	MAC = 0		CFU/100 mL	2024-02-07	НТ3
Total Metals							
Manganese, total		0.141	MAC = 0.12	0.00020	ma/L	2024-02-09	
Field Parameters Temperature, field	St. (24B0769-02)   Matrix	5.9	AO ≤ 15		°C	2024-02-06	
and the state of t		5.9	AU ≤ 15		-0	2024-02-06	
General Parameters							
Turbidity		< 0.10	OG < 1	0.10	NTU	2024-02-08	
Microbiological Paran	neters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-02-07	
Heterotrophic Plate C	Count	< 5	N/A		CFU/mL	2024-02-07	HT1
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-02-07	
Total Metals							
Manganese, total		0.00577	MAC = 0.12	0.00020	mg/L	2024-02-09	
	tal (24B0769-03)   Matrix	: Water   Samp	led: 2024-02-06 10	:45			
Field Parameters			The Zook		42	1150000000	
Temperature, field		6.0	AO ≤ 15		°C	2024-02-06	
General Parameters							
Turbidity		0.42	OG < 1	0.10	NTU	2024-02-08	
Microbiological Paran	neters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-02-07	
Heterotrophic Plate C	count	< 5	N/A	5	CFU/mL	2024-02-07	HT1
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-02-07	
Total Metals							
Manganese, total		0.0271	MAC = 0.12	0.00020		2024-02-09	



REPORTED TO Quesnel, City of Bi-Weekly - Third Week				WORK ORDER REPORTED	24B0769 2024-02-1	4 12:04
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94F3 - S-Nason St. (24B0769-04)   Matr	ix: Water   Sam	pled: 2024-02-06 1	3:15			
Field Parameters						
Temperature, field	5.7	AO ≤ 15		°C	2024-02-06	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-02-08	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-02-07	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-02-07	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-02-07	
Total Metals						
Manganese, total	0.137	MAC = 0.12	0.00020	mg/L	2024-02-09	
Temperature, field  General Parameters	9.1	AO ≤ 15		°C	2024-02-06	
Field Parameters						
	<b>5.1</b>					
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-02-08	
Microbiological Parameters				130 F		
	- 1	MAC = 0	4	CFU/100 mL	2024-02-07	
Coliforms, Total	< 1 < 5	N/A		CFU/mL	2024-02-07	HT1
Heterotrophic Plate Count  E. coli	< 1	MAC = 0		CFU/100 mL	2024-02-07	1111
Total Metals						
Manganese, total	0.144	MAC = 0.12	0.00020	mg/L	2024-02-09	
WT# 94F6 - S-N Star South Hill (24B0769-06	i)   Matrix: Wate	r   Sampled: 2024-	Se At A see			
Field Parameters						
Temperature, field	9.4	AO ≤ 15		°C	2024-02-06	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-02-08	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-02-07	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-02-07	HT1
ACCUPATION AND ACCUPA	< 1	MAC = 0	1	CFU/100 mL	2024-02-07	
E. coli	7-11-1					
E. COII  Total Metals	72.0					



REPORTED TO Quesnel, City of Bi-Weekly - Third Week				WORK ORDER REPORTED	24B0769 2024-02-1	4 12:04
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94F7 - S-Chew Rd. (24B0769-07)   Matr	ix: Water   Sam	pled: 2024-02-06 1	1:50			
Field Parameters						
Temperature, field	7.7	AO ≤ 15		°C	2024-02-06	
General Parameters						
Turbidity	0.23	OG < 1	0.10	NTU	2024-02-08	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-02-07	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-02-07	HT1
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-02-07	
Total Metals						
Manganese, total	0.160	MAC = 0.12	0.00020	mg/L	2024-02-09	
WT# 21D9B - Bulk Water Site 1 (24B0769-08  Field Parameters  Temperature, field	)   Matrix: Wate	er   <b>Sampled: 2024</b> AO ≤ 15	02-06 14:45	°C	2024-02-06	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-02-08	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-02-07	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-02-07	HT1
E. coli	< 1	MAC = 0		CFU/100 mL	2024-02-07	
Total Metals						
PARTY TICKNAY						

MAC = 0.12

0.00020 mg/L

## Sample Qualifiers:

Manganese, total

HT1 The sample was prepared and/or analyzed past the recommended holding time.

HT3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.

0.0607

2024-02-09



## **APPENDIX 1: SUPPORTING INFORMATION**

REPORTED TO

Quesnel, City of

PROJECT

Bi-Weekly - Third Week

WORK ORDER

24B0769

REPORTED

2024-02-14 12:04

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Heterotrophic Plate Count in Water	SM 9215 D (2022)	Membrane Filtration / Membrane Filtration	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	1	Kelowna

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

#### Glossary of Terms:

RL Reporting Limit (default)

Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres
CFU/mL Colony Forming Units per millilitre

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

NTU Nephelometric Turbidity Units
OG Operational Guideline (treated water)

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

#### General Comments:

The results in this report apply to the received samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Caro will dispose of all samples within 30 days of sample receipt, unless otherwise agreed. The quality control (QC) data is available upon request

Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted **red**. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do <u>not</u> take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager:bwhitehead@caro.ca

Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline (s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability or responsibility for any loss attributed from the use of these guidelines in any way.





REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

WORK ORDER

24C1512

PO NUMBER

**PROJECT INFO** 

PROJECT

Bi-Weekly - Third Week

RECEIVED / TEMP

2024-03-13 14:27 / 5.2°C

REPORTED

2024-03-20 09:36

#### Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks



We've Got Chemistry



Ahead of the Curve



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: https://www.caro.ca/terms-conditions

If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead Account Manager M undbud

1-888-311-8846 | www.caro.ca

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



DEDODTED TO							
REPORTED TO PROJECT	Quesnel, City of Bi-Weekly - Third Week				WORK ORDER REPORTED	24C1512 2024-03-2	0 09:36
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94E6 - S-Ca	rradice Rd. (24C1512-01)   M	atrix: Water	Sampled: 2024-03-	12 09:40			
Field Parameters							
Temperature, field		7.6	AO ≤ 15		°C	2024-03-12	
General Parameter	r's						
Turbidity		0.22	OG < 1	0.10	NTU	2024-03-14	
Microbiological Pa	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-03-13	НТ3
Heterotrophic Plat	te Count	< 5	N/A		CFU/mL	2024-03-13	HT1
E. coli		< 1	MAC = 0		CFU/100 mL	2024-03-13	НТ3
Total Metals							
Manganese, total		0.106	MAC = 0.12	0.00020	mg/L	2024-03-19	
Field Parameters Temperature, field	1	7.9	AO ≤ 15		°C	2024-03-12	
General Parameter	rs						
Turbidity		0.46	OG < 1	0.10	NTU	2024-03-14	
Microbiological Da	rameters						
Microbiological Pa							
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-03-13	
	te Count	< 1 < 5	MAC = 0 N/A		CFU/100 mL CFU/mL	2024-03-13 2024-03-13	HT1
Coliforms, Total	te Count			5		11.48.11.11.11.11.11.11.11.11.11.11.11.11.11	HT1
Coliforms, Total Heterotrophic Pla	te Count	< 5	N/A	5	CFU/mL	2024-03-13	HT1
Coliforms, Total Heterotrophic Pla E. coli		< 5	N/A	5	CFU/mL CFU/100 mL	2024-03-13	HT1
Coliforms, Total Heterotrophic Pla E. coli  Total Metals Manganese, total		< 5 < 1 0.00966	N/A MAC = 0 MAC = 0.12	0.00020	CFU/mL CFU/100 mL	2024-03-13 2024-03-13	HT1
Coliforms, Total Heterotrophic Pla E. coli  Total Metals Manganese, total		< 5 < 1 0.00966	N/A MAC = 0 MAC = 0.12	0.00020	CFU/mL CFU/100 mL	2024-03-13 2024-03-13	HT1
Coliforms, Total Heterotrophic Pla E. coli  Total Metals Manganese, total  WT# 94F2 - S-Ho	spital (24C1512-03)   Matrix:	< 5 < 1 0.00966	N/A MAC = 0 MAC = 0.12	0.00020	CFU/mL CFU/100 mL	2024-03-13 2024-03-13	HT1
Coliforms, Total Heterotrophic Pla E. coli  Total Metals Manganese, total  WT# 94F2 - S-Ho  Field Parameters  Temperature, field	spital (24C151 <mark>2-0</mark> 3)   Matrix:	< 5 < 1 0.00966 Water   Samp	N/A MAC = 0 MAC = 0.12 Med: 2024-03-12 10	0.00020	CFU/mL CFU/100 mL mg/L	2024-03-13 2024-03-13 2024-03-19	HT1
Coliforms, Total Heterotrophic Pla E. coli  Total Metals Manganese, total  WT# 94F2 - S-Ho  Field Parameters  Temperature, field	spital (24C151 <mark>2-0</mark> 3)   Matrix:	< 5 < 1 0.00966 Water   Samp	N/A MAC = 0 MAC = 0.12 Med: 2024-03-12 10	0.00020	CFU/mL CFU/100 mL mg/L	2024-03-13 2024-03-13 2024-03-19	HT1
Coliforms, Total Heterotrophic Pla E. coli  Total Metals Manganese, total  WT# 94F2 - S-Ho  Field Parameters Temperature, field	spital (24C1512-03)   Matrix:	< 5 < 1 0.00966 Water   Samp	N/A MAC = 0 MAC = 0.12 Ied: 2024-03-12 10 AO ≤ 15	0.00020	CFU/mL CFU/100 mL mg/L	2024-03-13 2024-03-13 2024-03-19 2024-03-12	HT1
Coliforms, Total Heterotrophic Pla E. coli  Total Metals Manganese, total  WT# 94F2 - S-Ho  Field Parameters Temperature, field General Parameter Turbidity	spital (24C1512-03)   Matrix:	< 5 < 1 0.00966 Water   Samp	N/A MAC = 0 MAC = 0.12 Ied: 2024-03-12 10 AO ≤ 15	0.00020 :15	CFU/mL CFU/100 mL mg/L	2024-03-13 2024-03-13 2024-03-19 2024-03-12	HT1
Coliforms, Total Heterotrophic Pla E. coli Total Metals Manganese, total WT# 94F2 - S-Ho Field Parameters Temperature, field General Parameter Turbidity Microbiological Pa	spital (24C1512-03)   Matrix:	< 5 < 1 0.00966 Water   Samp 7.5	N/A MAC = 0 MAC = 0.12 led: 2024-03-12 10 AO ≤ 15 OG < 1	0.00020 :15	CFU/mL CFU/100 mL mg/L °C	2024-03-13 2024-03-13 2024-03-19 2024-03-12 2024-03-14	HT1
Coliforms, Total Heterotrophic Pla E. coli Total Metals Manganese, total WT# 94F2 - S-Ho Field Parameters Temperature, field General Parameter Turbidity Microbiological Pa	spital (24C1512-03)   Matrix:	< 5 < 1 0.00966 Water   Samp 7.5 0.24	N/A MAC = 0  MAC = 0.12  Med: 2024-03-12 10  AO ≤ 15  OG < 1  MAC = 0	0.00020 :15	CFU/mL CFU/100 mL mg/L  °C NTU CFU/100 mL	2024-03-13 2024-03-19 2024-03-12 2024-03-14 2024-03-13	
Coliforms, Total Heterotrophic Pla E. coli  Total Metals Manganese, total  WT# 94F2 - S-Ho  Field Parameters Temperature, field General Parameter Turbidity  Microbiological Pa  Coliforms, Total Heterotrophic Pla	spital (24C1512-03)   Matrix:	< 5 < 1 0.00966 Water   Samp 7.5 0.24 < 1 < 5	N/A MAC = 0  MAC = 0.12  Med: 2024-03-12 10  AO ≤ 15  OG < 1  MAC = 0  N/A	0.00020 :15	CFU/mL CFU/100 mL mg/L  °C  NTU  CFU/100 mL CFU/mL	2024-03-13 2024-03-19 2024-03-12 2024-03-14 2024-03-13 2024-03-13	



REPORTED TO

Quesnel, City of

**PROJECT** 

Bi-Weekly - Third Week

WORK ORDER

24C1512

REPORTED

2024-03-20 09:36

-ROJECT BI-Weekly - Tillia						
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
NT# 94F3 - S-Nason St. (24C1512-04	)   Matrix: Water   Sam	pled: 2024-03-12 1	2:00			
Field Parameters						
Temperature, field	8.2	AO ≤ 15		°C	2024-03-12	
General Parameters						
Turbidity	0.34	OG < 1	0.10	NTU	2024-03-14	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-03-13	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-03-13	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-03-13	
Total Metals						
Manganese, total	0.145	MAC = 0.12	0.00020	ma/l	2024-03-19	
Field Parameters	0.0	AO < 15		°C	2024 02 12	
Temperature, field	0.0	AO ≤ 15		°C	2024-03-12	
General Parameters						
Turbidity	0.34	OG < 1	0.10	NTU	2024-03-14	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-03-13	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-03-13	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-03-13	
Total Metals						
Manganese, total	0.125	MAC = 0.12	0.00020	mg/L	2024-03-19	
WT# 94F6 - S-N Star South Hill (24C Field Parameters	1512-06)   Matrix: Wate	r   Sampled: 2024-	03-12 14:20		1 11	
	1512-06)   Matrix: Wate	r   <b>Sampled: 2024-</b> AO ≤ 15	03-12 14:20	°C	2024-03-12	
Field Parameters Temperature, field			03-12 14:20	°C	2024-03-12	
Field Parameters Temperature, field				°C NTU	2024-03-12	
Field Parameters Temperature, field General Parameters Turbidity	0.0	AO ≤ 15		10.87		
Field Parameters Temperature, field General Parameters Turbidity Microbiological Parameters	0.0	AO ≤ 15	0.10	10.87		
Field Parameters Temperature, field General Parameters Turbidity	0.0	AO ≤ 15 OG < 1	0.10	NTU	2024-03-14	HT1
Field Parameters Temperature, field  General Parameters Turbidity  Microbiological Parameters  Coliforms, Total	0.0	AO ≤ 15  OG < 1  MAC = 0	0.10 1 5	NTU CFU/100 mL	2024-03-14	HT1
Field Parameters Temperature, field  General Parameters Turbidity  Microbiological Parameters  Coliforms, Total Heterotrophic Plate Count	0.0 0.39 < 1 < 5	AO ≤ 15  OG < 1  MAC = 0  N/A	0.10 1 5	NTU  CFU/100 mL  CFU/mL	2024-03-14 2024-03-13 2024-03-13	HT1



REPORTED TO Quesnel, City of Bi-Weekly - Third Week				WORK ORDER REPORTED	24C1512 2024-03-2	20 09:36
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94F7 - S-Chew Rd. (24C1512-07)   Matri:	x: Water   Sam	pled: 2024-03-12 1	2:40			
Field Parameters						
Temperature, field	8.2	AO ≤ 15		°C	2024-03-12	
General Parameters						
Turbidity	0.15	OG < 1	0.10	NTU	2024-03-14	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-03-13	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-03-13	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-03-13	
Total Metals						
Manganese, total	0.159	MAC = 0.12	0.00020	mg/L	2024-03-19	
WT# 21D9B - Bulk Water Site 1 (24C1512-08)  Field Parameters  Temperature, field	)   Matrix: Wate	er   <b>Sampled: 2024</b> - AO ≤ 15	-03-12 11:10	°C	2024-03-12	
General Parameters						
Turbidity	0.29	OG < 1	0.10	NTU	2024-03-14	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-03-13	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-03-13	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-03-13	
Total Metals						
N. C.				10.00	4447344	

MAC = 0.12

0.00020 mg/L

## Sample Qualifiers:

Manganese, total

HT1 The sample was prepared and/or analyzed past the recommended holding time.

HT3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.

0.0725

2024-03-19



## **APPENDIX 1: SUPPORTING INFORMATION**

REPORTED TO

Quesnel, City of

**PROJECT** 

Bi-Weekly - Third Week

WORK ORDER

24C1512

REPORTED

2024-03-20 09:36

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Heterotrophic Plate Count in Water	SM 9215 D (2022)	Membrane Filtration / Membrane Filtration	1	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	<b>✓</b>	Kelowna

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

#### Glossary of Terms:

RL Reporting Limit (default)

Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres
CFU/mL Colony Forming Units per millilitre

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

NTU Nephelometric Turbidity Units
OG Operational Guideline (treated water)

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

#### **General Comments:**

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REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

WORK ORDER

24D0374

PO NUMBER

**PROJECT INFO** 

**PROJECT** 

Bi-Weekly - Third Week

RECEIVED / TEMP REPORTED 2024-04-03 14:52 / 7.8°C

KEPOKIED

2024-04-10 16:51

COC NUMBER

No Number

#### Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks



We've Got Chemistry



Ahead of the Curve



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Authorized By:

Brent Whitehead Account Manager M undbud

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REPORTED TO							
PROJECT	Quesnel, City of Bi-Weekly - Third Week				WORK ORDER REPORTED	24D0374 2024-04-1	0 16:51
Analyte		Result	Guideline	RL	Units	Analyzed	Qualific
WT# 94E6 - S-Car	radice Rd. (24D0374-01)   M	atrix: Water	Sampled: 2024-04-	02 09:15			
Field Parameters							
Temperature, field		8.1	AO ≤ 15		°C	2024-04-02	
General Parameters	S						
Turbidity		0.21	OG < 1	0.10	NTU	2024-04-04	
Microbiological Pai	rameters						
Coliforms, Total		<1	MAC = 0	1	CFU/100 mL	2024 04 03	НТ3
Heterotrophic Plat	e Count	< 5	N/A		CFU/mL	2024-04-03	HT1
E. coli	7, 7, 7, 7, 11	< 1	MAC = 0		CFU/100 mL	2024-04-03	HT3
Total Metals							
Manganese, total		0.106	MAC = 0.12	0.00020	ma/l	2024-04-08	
WT# 94F1 - S-Dix Field Parameters	on St. (24D0374-02)   Matrix	: Water   Sam	pled: 2024-04-02 10	0:40			
Temperature, field		7.9	AO ≤ 15		°C	2024-04-02	
General Parameters	9		7.01000				
General Parameter:	3						
Turbidity		< 0.10	OG < 1	0.10	NTU	2024-04-04	
Turbidity		< 0.10	OG < 1	0.10	NTU	2024-04-04	
Turbidity  Microbiological Pai							
Turbidity  Microbiological Pai  Coliforms, Total	rameters	< 1	MAC = 0	1	CFU/100 mL	2024-04-03	HT1
Turbidity  Microbiological Pai	rameters			1 5			HT1
Turbidity  Microbiological Pal  Coliforms, Total  Heterotrophic Plat	rameters	< 1 < 5	MAC = 0 N/A	1 5	CFU/100 mL CFU/mL	2024-04-03 2024-04-03	HT1
Turbidity  Microbiological Pail Coliforms, Total Heterotrophic Plat E. coli	rameters	< 1 < 5	MAC = 0 N/A	1 5	CFU/100 mL CFU/mL CFU/100 mL	2024-04-03 2024-04-03	HT1
Turbidity  Microbiological Pail Coliforms, Total Heterotrophic Plat E. coli  Total Metals Manganese, total	rameters	< 1 < 5 < 1 0.00943	MAC = 0 N/A MAC = 0 MAC = 0.12	1 5 1	CFU/100 mL CFU/mL CFU/100 mL	2024-04-03 2024-04-03 2024-04-03	HT1
Turbidity  Microbiological Pail Coliforms, Total Heterotrophic Plat E. coli  Total Metals Manganese, total  WT# 94F2 - S-Hos	e Count	< 1 < 5 < 1 0.00943	MAC = 0 N/A MAC = 0 MAC = 0.12	1 5 1	CFU/100 mL CFU/mL CFU/100 mL	2024-04-03 2024-04-03 2024-04-03	HT1
Turbidity  Microbiological Pail Coliforms, Total Heterotrophic Plat E. coli  Total Metals Manganese, total	rameters e Count spital (24D0374-03)   Matrix:	< 1 < 5 < 1 0.00943	MAC = 0 N/A MAC = 0 MAC = 0.12	1 5 1	CFU/100 mL CFU/mL CFU/100 mL	2024-04-03 2024-04-03 2024-04-03	HT1
Turbidity  Microbiological Paid Coliforms, Total Heterotrophic Plate E. coli  Total Metals Manganese, total  WT# 94F2 - S-Hose  Field Parameters	rameters e Count spital (24D0374-03)   Matrix:	< 1 < 5 < 1 0.00943 Water   Samp	MAC = 0 N/A MAC = 0 MAC = 0.12	1 5 1	CFU/100 mL CFU/mL CFU/100 mL	2024-04-03 2024-04-03 2024-04-03 2024-04-08	HT1
Turbidity  Microbiological Pail Coliforms, Total Heterotrophic Plat E. coli  Total Metals Manganese, total  WT# 94F2 - S-Hos  Field Parameters Temperature, field	rameters e Count spital (24D0374-03)   Matrix:	< 1 < 5 < 1 0.00943 Water   Samp	MAC = 0 N/A MAC = 0 MAC = 0.12	1 5 1 0.00020	CFU/100 mL CFU/mL CFU/100 mL	2024-04-03 2024-04-03 2024-04-03 2024-04-08	HT1
Turbidity  Microbiological Pail Coliforms, Total Heterotrophic Plat E. coli  Total Metals Manganese, total  WT# 94F2 - S-Hos  Field Parameters Temperature, field  General Parameters Turbidity	rameters e Count spital (24D0374-03)   Matrix:	< 1 < 5 < 1 0.00943 Water   Samp	MAC = 0 N/A MAC = 0 MAC = 0.12 Med: 2024-04-02 09 AO ≤ 15	1 5 1 0.00020	CFU/100 mL CFU/mL CFU/100 mL mg/L	2024-04-03 2024-04-03 2024-04-03 2024-04-08	HT1
Turbidity  Microbiological Pail Coliforms, Total Heterotrophic Plat E. coli  Total Metals Manganese, total  WT# 94F2 - S-Hos  Field Parameters Temperature, field  General Parameters Turbidity	rameters e Count spital (24D0374-03)   Matrix:	< 1 < 5 < 1 0.00943 Water   Samp	MAC = 0 N/A MAC = 0 MAC = 0.12 Med: 2024-04-02 09 AO ≤ 15	0.00020 :50	CFU/100 mL CFU/mL CFU/100 mL mg/L	2024-04-03 2024-04-03 2024-04-03 2024-04-08	HT1
Turbidity  Microbiological Pail Coliforms, Total Heterotrophic Plat E. coli  Total Metals Manganese, total  WT# 94F2 - S-Hos Field Parameters Temperature, field General Parameters Turbidity  Microbiological Pail	rameters e Count spital (24D0374-03)   Matrix:	< 1 < 5 < 1  0.00943  Water   Samp  8.1 < 0.10	MAC = 0 N/A MAC = 0  MAC = 0.12  Med: 2024-04-02 09  AO ≤ 15  OG < 1	0.00020 :50	CFU/100 mL CFU/mL CFU/100 mL mg/L	2024-04-03 2024-04-03 2024-04-08 2024-04-08 2024-04-02	
Turbidity  Microbiological Pail Coliforms, Total Heterotrophic Plat E. coli  Total Metals Manganese, total  WT# 94F2 - S-Hos Field Parameters Temperature, field General Parameters Turbidity  Microbiological Pail Coliforms, Total	rameters e Count spital (24D0374-03)   Matrix:	< 1 < 5 < 1 0.00943 Water   Samp 8.1 < 0.10	MAC = 0 N/A MAC = 0  MAC = 0.12  Med: 2024-04-02 09  AO ≤ 15  OG < 1  MAC = 0	0.00020 0.10	CFU/100 mL CFU/mL CFU/100 mL mg/L  °C NTU CFU/100 mL	2024-04-03 2024-04-03 2024-04-08 2024-04-02 2024-04-04 2024-04-03	НТЗ
Turbidity  Microbiological Pail Coliforms, Total Heterotrophic Plat E. coli  Total Metals Manganese, total  WT# 94F2 - S-Hos  Field Parameters Temperature, field General Parameters Turbidity  Microbiological Pail Coliforms, Total Heterotrophic Plat	rameters e Count spital (24D0374-03)   Matrix:	<1 < 5 < 1 0.00943 Water   Samp 8.1 < 0.10 < 1 < 5	MAC = 0 N/A MAC = 0  MAC = 0.12  MAC = 0.12  MAC = 05  AO ≤ 15  OG < 1  MAC = 0 N/A	0.00020 0.10	CFU/100 mL CFU/100 mL mg/L  °C  NTU  CFU/100 mL  CFU/100 mL	2024-04-03 2024-04-03 2024-04-08 2024-04-02 2024-04-04 2024-04-03 2024-04-03	HT3 HT1



REPORTED TO Quesnel, City of Bi-Weekly - Third Week				WORK ORDER REPORTED	24D0374 2024-04-1	0 16:51
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
NT# 94F3 - S-Nason St. (24D0374-04)   Matri	x: Water   Sam	pled: 2024-04-02 1	3:00			
Field Parameters						
Temperature, field	8.2	AO ≤ 15		°C	2024-04-02	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-04-04	
Microbiological Parameters						
	< 1	MAC = 0	1	CFU/100 mL	2024-04-03	
Coliforms, Total	< 5	N/A		CFU/mL	2024-04-03	HT1
Heterotrophic Plate Count  E. coli	<1	MAC = 0		CFU/100 mL	2024-04-03	
	-27.5			and the second s	The second second	
Total Metals  Manganese, total	0.143	MAC = 0.12	0.00020	ma/l	2024-04-08	
WT# 94F4 - S-N Star Dragon Hill (24D0374-0	5)   Matrix: Wat	er   Sampled: 2024	1-04-02 14:00	i		
Field Parameters						
Temperature, field	8.2	AO ≤ 15		°C	2024-04-02	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-04-04	
Microbiological Parameters	The Ar			05114001	2024.04.02	
Coliforms, Total	< 1	MAC = 0		CFU/100 mL	2024-04-03	HT1
Heterotrophic Plate Count	< 5	N/A		CFU/mL CFU/100 mL	2024-04-03	ПЛ
E. coli	< 1	MAC = 0	1	CFO/100 IIIL	2024-04-03	
Total Metals						
Manganese, total	0.148	MAC = 0.12	0.00020	mg/L	2024-04-08	
WT# 94F6 - S-N Star South Hill (24D0374-06	)   Matrix: Wate	er   Sampled: 2024-	04-02 13:55			
Field Parameters						
Temperature, field	8.2	AO ≤ 15		°C	2024-04-02	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-04-04	
Microbiological Parameters						
	< 1	MAC = 0	1	CFU/100 mL	2024-04-03	
Coliforms, Total		201 1/2 1/2		CFU/mL	2024-04-03	HT1
Coliforms, Total  Heterotrophic Plate Count	< 5	N/A	5	CFU/IIIL	2024-04-03	1111
Coliforms, Total  Heterotrophic Plate Count  E. coli	< 5 < 1	N/A MAC = 0		CFU/100 mL	2024-04-03	3113
Heterotrophic Plate Count						,,,,



REPORTED TO Quesnel, City of PROJECT Bi-Weekly - Third V	Veek			WORK ORDER REPORTED	24D0374 2024-04-1	0 16:51
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94F7 - S-Chew Rd. (24D0374-07)	Matrix: Water   Sam	pled: 2024-04-02 1	4:40	-		
Field Parameters						
Temperature, field	8.4	AO ≤ 15		°C	2024-04-02	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-04-04	
Microbiological Parameters						
Coliforms, Total	<1	MAC = 0	1	CFU/100 mL	2024-04-03	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-04-03	HT1
E. coli	< 1	MAC = 0		CFU/100 mL	2024-04-03	
Total Metals						
Manganese, total	0.160	MAC = 0.12	0.00020	ma/L	2024-04-08	
WT# 21D9B - Bulk Water Site 1 (24D0  Field Parameters  Temperature, field	374-08)   Matrix: Wate	er   <b>Sampled: 2024-</b> AO ≤ 15	04-02 11:30	°C	2024-04-02	
General Parameters		24.600.37	2.12	AUTO	2024.04.04	
General Parameters  Turbidity	0.13	OG < 1	0.10	NIU	2024-04-04	
General Parameters  Turbidity  Microbiological Parameters	0.13	OG < 1	0.10	NIU	2024-04-04	
Turbidity	0.13	OG < 1 MAC = 0		CFU/100 mL		
Turbidity  Microbiological Parameters			1		2024-04-03 2024-04-03	HT1

MAC = 0.12

0.00020 mg/L

## Sample Qualifiers:

Manganese, total

HT1 The sample was prepared and/or analyzed past the recommended holding time.

HT3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.

0.0352

2024-04-08



## APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO

Quesnel, City of

PROJECT

Bi-Weekly - Third Week

WORK ORDER

24D0374

REPORTED

2024-04-10 16:51

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	~	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
Heterotrophic Plate Count in Water	SM 9215 D (2022)	Membrane Filtration / Membrane Filtration	1	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	1	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	1	Kelowna

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

#### Glossary of Terms:

RL Reporting Limit (default)

Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres
CFU/mL Colony Forming Units per millilitre

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

NTU Nephelometric Turbidity Units
OG Operational Guideline (treated water)

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

#### General Comments:

The results in this report apply to the received samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Caro will dispose of all samples within 30 days of sample receipt, unless otherwise agreed. The quality control (QC) data is available upon request

Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted red. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do <u>not</u> take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager:bwhitehead@caro.ca

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## CERTIFICATE OF ANALYSIS

REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

WORK ORDER

24E0180

PO NUMBER

PROJECT INFO

**PROJECT** 

Bi-Weekly - Third Week

RECEIVED / TEMP REPORTED

2024-05-01 15:48 / 10.5°C

2024-05-07 15:49

**COC NUMBER** 

No Number

#### Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks



We've Got Chemistry



Ahead of the Curve



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to important and expensive (whew) is VERY important. We know that too.

It's simple. We figure the more you with our fun and enjoy working engaged team members; the more likely you are to give us continued opportunities to support you.

Through research, regulation knowledge, and instrumentation, analytical centre for are your knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: https://www.caro.ca/terms-conditions

If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

**Brent Whitehead** Account Manager which

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REPORTED TO Quesnel, City of Bi-Weekly - Third Week				WORK ORDER REPORTED	24E0180 2024-05-0	7 15:49
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94E6 - S-Carradice Rd. (24E0180-01)   N	latrix: Water	Sampled: 2024-04-	30 09:20			
Field Parameters						
Temperature, field	8.1	AO ≤ 15		°C	2024-04-30	
General Parameters						
Turbidity	0.26	OG < 1	0.10	NTU	2024-05-02	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-05-01	НТ3
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-05-01	HT1
E. coli	< 1	MAC = 0	A**	CFU/100 mL	2024-05-01	НТЗ
Total Metals						
Manganese, total	0.0994	MAC = 0.12	0.00020	ma/L	2024-05-03	
Field Parameters Temperature, field	7.9	AO ≤ 15		°C	2024-04-30	
Temperature, field	7.9	AO ≤ 15		°C	2024-04-30	
General Parameters						
Turbidity	0.22	OG < 1	0.10	NTU	2024-05-02	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-05-01	НТ3
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-05-01	HT1
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-05-01	HT3
Total Metals						
Manganese, total	0.00506	MAC = 0.12	0.00020	mg/L	2024-05-03	
WT# 94F2 - S-Hospital (24E0180-03)   Matrix: Field Parameters  Temperature, field	: Water   Samp	led: 2024-04-30 09  AO ≤ 15	:50	°C	2024-04-30	
General Parameters						
Turbidity	0.11	OG < 1	0.10	NTU	2024-05-02	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	4	CFU/100 mL	2024-05-01	НТ3
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-05-01	HT1
E. coli	< 1	MAC = 0		CFU/100 mL	2024-05-01	HT3
A TOWN TO THE TOWN						
Total Metals						



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REPORTED TO PROJECT	Quesnel, City of Bi-Weekly - Third Week				WORK ORDER REPORTED	24E0180 2024-05-0	7 15:49
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifie
NT# 94F3 - S-Nas	on St. (24E0180-04)   Matri	x: Water   Sam	pled: 2024-04-30 1	1:20			
Field Parameters							
Temperature, field		8.1	AO ≤ 15		°C	2024-04-30	
General Parameters							
Turbidity		< 0.10	OG < 1	0.10	NTU	2024-05-02	
Microbiological Para	ameters						
	imeters	< 1	MAC = 0	4	CFU/100 mL	2024-05-01	
Coliforms, Total Heterotrophic Plate	Count	< 5	N/A		CFU/mL	2024-05-01	HT1
E. coli	Count	<1	MAC = 0		CFU/100 mL	2024-05-01	1111
Total Metals							
Manganese, total		0.129	MAC = 0.12	0.00020	ma/l	2024-05-03	
WT# 94F4 - S-N S1	ar Dragon Hill (24E0180-0	5)   Matrix: Wat	er   Sampled: 2024	1-04-30 13:50			
Field Parameters							
Temperature, field		8.3	AO ≤ 15		°C	2024-04-30	
General Parameters							
Turbidity		0.12	OG < 1	0.10	NTU	2024-05-02	
Microbiological Par	ameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-05-01	
Heterotrophic Plate	Count	< 5	N/A		CFU/mL	2024-05-01	HT1
E. coli	Count	< 1	MAC = 0		CFU/100 mL	2024-05-01	
Total Metals							
Manganese, total		0.165	MAC = 0.12	0.00020	mg/L	2024-05-03	
WT# 94F6 - S-N S	ar South Hill (24E0180-06)	)   Matrix: Wate	r   Sampled: 2024-	04-30 14:00			
Field Parameters							
Temperature, field		8.1	AO ≤ 15		°C	2024-04-30	
General Parameters							
Turbidity		< 0.10	OG < 1	0.10	NTU	2024-05-02	
Microbiological Par	ameters						
		< 1	MAC = 0	1	CFU/100 mL .	2024-05-01	
Coliforms. Total		200			CFU/mL		LITA
Coliforms, Total Heterotrophic Plate	e Count	< 5	N/A	5	CIOMIL	2024-05-01	HT1
	e Count	< 5 < 1	N/A MAC = 0		CFU/100 mL	2024-05-01	нп
Heterotrophic Plate	e Count						пп



REPORTED TO Quesnel, City of

PROJECT Bi-Weekly - Third Week

WORK ORDER

24E0180

REPORTED 20

2024-05-07 15:49

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94F7 - S-Chew Rd. (24E0180-07	')   Matrix: Water   Sam	pled: 2024-04-30 1	2:00			
Field Parameters		1,4114				
Temperature, field	8.9	AO ≤ 15		°C	2024-04-30	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-05-02	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-05-01	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-05-01	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-05-01	
Total Metals						
Manganese, total	0.163	MAC = 0.12	0.00020	mg/L	2024-05-03	
WT# 21D9B - Bulk Water Site 1 (24E  Field Parameters  Temperature, field	0180-08)   Matrix: Wate	r   <b>Sampled: 2024-</b> AO ≤ 15	04-30 13:00	°C	2024-04-30	
General Parameters						
Turbidity	0.32	OG < 1	0.10	NTU	2024-05-02	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-05-01	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-05-01	HT1
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-05-01	
Total Metals						

## Sample Qualifiers:

HT1 The sample was prepared and/or analyzed past the recommended holding time.

HT3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.



## APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO **PROJECT** 

Quesnel, City of

Bi-Weekly - Third Week

WORK ORDER

24E0180

REPORTED

2024-05-07 15:49

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Heterotrophic Plate Count in Water	SM 9215 D (2022)	Membrane Filtration / Membrane Filtration	✓.	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	1	Kelowna

#### Glossary of Terms:

RL

< Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius Aesthetic Objective AO

CFU/100 mL Colony Forming Units per 100 millilitres Colony Forming Units per millilitre CFU/mL

Maximum Acceptable Concentration (health based) MAC

Milligrams per litre mg/L

Nephelometric Turbidity Units NTU Operational Guideline (treated water) OG

United States Environmental Protection Agency Test Methods **EPA** 

Standard Methods for the Examination of Water and Wastewater, American Public Health Association SM

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## CERTIFICATE OF ANALYSIS



Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

WORK ORDER

24G0304

PO NUMBER PROJECT

Bi-Weekly - Third Week

RECEIVED / TEMP

2024-07-03 14:30 / 17.1°C

REPORTED

2024-07-10 10:50

COC NUMBER

No Number

#### Introduction:

PROJECT INFO

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It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

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If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead Account Manager M undbud

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REPORTED TO	Quesnel, City of	WORK ORDER	24G0304
PROJECT	Bi-Weekly - Third Week	REPORTED	2024-07-10 10:50

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94E6 - S-Carradice Rd. (24G030	4-01)   Matrix: Water	Sampled: 2024-07-	-02 11:35			
Field Parameters						
Temperature, field	10.3	AO ≤ 15		°C	2024-07-02	
General Parameters						
Turbidity	0.20	OG < 1	0.10	NTU	2024-07-04	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-07-03	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-07-03	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-07-03	
Total Metals						
Manganese, total	0.0220	MAC = 0.12	0.00020	mg/L	2024-07-05	
WT# 94F1 - S-Dixon St. (24G0304-02) Field Parameters		pied: 2024-07-02 10	0:45			
Temperature, field	12.3	AO ≤ 15		°C	2024.07.02	
	12.3	AO 2 13		C	2024-07-02	
General Parameters	2.1.	122	727.6		11215007	
Turbidity	0.19	OG < 1	0.10	NTU	2024-07-04	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0		CFU/100 mL	2024-07-03	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-07-03	HT1
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-07-03	
Total Metals						
Manganese, total	0.00857	MAC = 0.12	0.00020	mg/L	2024-07-05	1 -
WT# 94F2 - S-Hospital (24G0304-03)	Matrix: Water   Samp	led: 2024-07-02 11	:10			
	Matrix: Water   Samp	led: 2024-07-02 11	:10			
	Matrix: Water   Samp	<b>led: 2024-07-02 11</b> AO ≤ 15	:10	°C	2024-07-02	
Field Parameters Temperature, field			:10	°C	2024-07-02	
Field Parameters Temperature, field				°C NTU	2024-07-02	
Field Parameters Temperature, field General Parameters Turbidity	11.5	AO ≤ 15				
Field Parameters Temperature, field General Parameters Turbidity	11.5	AO ≤ 15	0.10	NTU	2024-07-04	
Field Parameters Temperature, field General Parameters Turbidity Microbiological Parameters	11.5 0.44	AO ≤ 15 OG < 1	0.10			HT1
General Parameters Turbidity Microbiological Parameters Coliforms, Total	11.5 0.44 < 1	AO ≤ 15  OG < 1  MAC = 0	0.10	NTU CFU/100 mL	2024-07-04	HT1
Field Parameters Temperature, field  General Parameters Turbidity  Microbiological Parameters  Coliforms, Total Heterotrophic Plate Count	11.5 0.44 < 1 < 5	AO ≤ 15  OG < 1  MAC = 0  N/A	0.10	NTU  CFU/100 mL  CFU/mL	2024-07-04 2024-07-03 2024-07-03	HT1



REPORTED TO PROJECT

Quesnel, City of Bi-Weekly - Third Week

WORK ORDER

24G0304

REPORTED

2024-07-10 10:50

PROJECT Bi-Weekly - Third	Week			REPORTED	2024-07-1	0 10:50
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94F3 - S-Nason St. (24G0304-04	)   Matrix: Water   Sam	pled: 2024-07-02 1	0:00			
Field Parameters						
Temperature, field	12.5	AO ≤ 15		°C	2024-07-02	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-07-04	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-07-03	HT3
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-07-03	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-07-03	HT3
Total Metals						
Manganese, total	0.133	MAC = 0.12	0.00020	mg/L	2024-07-05	
Field Parameters  Temperature, field	9.7	AO ≤ 15		°C	2024-07-02	
Field Parameters						
a contrata versas estados	5.1	A0 2 10		0	2024 07 02	
General Parameters	0.40	00 - 4	0.40	NITH	0004 07 04	
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-07-04	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0		CFU/100 mL	2024-07-03	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-07-03	HT1
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-07-03	
Total Metals						
Manganese, total	0.149	MAC = 0.12	0.00020	mg/L	2024-07-05	
WT# 94F7 - S-Chew Rd. (24G0304-0	6)   Matrix: Water   Sam	pled: 2024-07-02 0	9:35			
Field Parameters						
Temperature, field	10.0	AO ≤ 15		°C	2024-07-02	
General Parameters						
Turbidity	0.10	OG < 1	0.10	NTU	2024-07-04	
Microbiological Parameters						
O. P. T. I	<1	MAC = 0	1	CFU/100 mL	2024-07-03	НТ3
Coliforms, Total						100
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-07-03	HT1
		N/A MAC = 0		CFU/mL CFU/100 mL	2024-07-03 2024-07-03	HT1 HT3
Heterotrophic Plate Count	< 5					





REPORTED TO

Quesnel, City of

**PROJECT** 

Bi-Weekly - Third Week

WORK ORDER

24G0304

REPORTED

2024-07-10 10:50

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 21D9B - Bulk Water Site 1 (24G	0304-07)   Matrix: Wate	r   Sampled: 2024-	07-02 13:50			
Field Parameters						
Temperature, field	10.9	AO ≤ 15		°C	2024-07-02	
General Parameters						
Turbidity	0.29	OG < 1	0.10	NTU	2024-07-04	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-07-03	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-07-03	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-07-03	
Total Metals						
Manganese, total	0.0627	MAC = 0.12	0.00020	ma/l	2024-07-05	

## Sample Qualifiers:

HT1 The sample was prepared and/or analyzed past the recommended holding time.

HT3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.



## APPENDIX 1: SUPPORTING INFORMATION

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Quesnel, City of

PROJECT

Bi-Weekly - Third Week

WORK ORDER

24G0304

REPORTED

2024-07-10 10:50

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
Heterotrophic Plate Count in Water	SM 9215 D (2022)	Membrane Filtration / Membrane Filtration	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	1	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	1	Kelowna

•

## Glossary of Terms:

RL Reporting Limit (default)

Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres
CFU/mL Colony Forming Units per millilitre

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

NTU Nephelometric Turbidity Units
OG Operational Guideline (treated water)

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

#### **General Comments:**

The results in this report apply to the received samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Caro will dispose of all samples within 30 days of sample receipt, unless otherwise agreed. The quality control (QC) data is available upon request

Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted **red**. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do <u>not</u> take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager:bwhitehead@caro.ca

Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline(s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability or responsibility for any loss attributed from the use of these guidelines in any way.





REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

PO NUMBER

PROJECT

Bi-Weekly - Third Week

PROJECT INFO

WORK ORDER

24G3113

RECEIVED / TEMP

2024-07-24 14:25 / 18.5°C

REPORTED

2024-07-31 11:42

**COC NUMBER** 

No Number

#### Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks



We've Got Chemistry



Ahead of the Curve



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

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If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead Account Manager M what

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						· Vinder	
	snel, City of /eekly - Third Week				WORK ORDER REPORTED	24G3113 2024-07-3	1 11:42
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94E6 - S-Carradice	e Rd. (24G3113-01)   M	atrix: Water	Sampled: 2024-07-	-23 09:30			
Field Parameters							
Temperature, field		10.5	AO ≤ 15		°C	2024-07-23	
General Parameters							
Turbidity		0.16	OG < 1	0.10	NTU	2024-07-25	
Microbiological Paramete	rs						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-07-24	НТ3
Heterotrophic Plate Coun	t	< 5	N/A		CFU/mL	2024-07-24	HT1
E. coli		< 1	MAC = 0		CFU/100 mL	2024-07-24	HT3
Total Metals							
Manganese, total		0.0192	MAC = 0.12	0.00020	mg/L	2024-07-26	
Field Parameters Temperature, field		12.1	AO ≤ 15		°C	2024-07-23	
Temperature, field		12.1	AO ≤ 15		°C	2024-07-23	
General Parameters							
Turbidity		0.52	OG < 1	0.10	NTU	2024-07-25	
Microbiological Paramete	rs						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-07-24	
Heterotrophic Plate Coun	t	< 5	N/A	5	CFU/mL	2024-07-24	HT1
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-07-24	
Total Metals							
Manganese, total		0.357	MAC = 0.12	0.00020	mg/L	2024-07-26	
WT# 94F2 - S-Hospital (	24G3113-03)   Matrix:	Water   Samp	led: 2024-07-23 10	:00			
Field Parameters							
Temperature, field		12.3	AO ≤ 15		°C	2024-07-23	
General Parameters							
Turbidity		< 0.10	OG < 1	0.10	NTU	2024-07-25	
Microbiological Paramete	rs	2 227 327 3					
Coliforms, Total		< 1	MAC = 0	á	CFU/100 mL	2024-07-24	НТЗ
Heterotrophic Plate Coun	t	< 5	N/A		CFU/mL	2024-07-24	HT1
E. coli		< 1	MAC = 0		CFU/100 mL	2024-07-24	HT3
Total Metals						The state of the s	
Manganese, total		0.0468	MAC = 0.12	0.00020	ma/l	2024-07-26	
manganese, total		0.0400	WAG - 0.12	0.00020	nig/L	2024-01-20	



REPORTED TO

Quesnel, City of

PROJECT

Bi-Weekly - Third Week

WORK ORDER

24G3113

REPORTED

2024-07-31 11:42

PROJECT Bi-Weekly - Third	Week			REPORTED	2024-07-3	1 11:42
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94F3 - S-Nason St. (24G3113-04	l)   Matrix: Water   Sam	pled: 2024-07-23 1	1:20			
Field Parameters						
Temperature, field	12.2	AO ≤ 15		°C	2024-07-23	
General Parameters						
Turbidity	0.12	OG < 1	0.10	NTU	2024-07-25	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-07-24	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-07-24	HT1
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-07-24	
Total Metals						
Manganese, total	0.111	MAC = 0.12	0.00020	mg/L	2024-07-26	
WT# 94F4 - S-N Star Dragon Hill (24  Field Parameters	G3113-05)   Matrix: Wat	er   Sampled: 2024	1-07-23 13:20			
Temperature, field	11.7	AO ≤ 15		°C	2024-07-23	
	11.0	7.0 - 10			202.01.20	
General Parameters	0.40	22.4	0.40	ACTIV	2024 07 25	
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-07-25	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0		CFU/100 mL	2024-07-24	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-07-24	HT1
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-07-24	
Total Metals						
Manganese, total	0.127	MAC = 0.12	0.00020	mg/L	2024-07-26	
WT# 94F6 - S-N Star South Hill (24G	3113-06)   Matrix: Wate	er   Sampled: 2024-	07-23 13:45			
Temperature, field	11.9	AO ≤ 15		°C	2024-07-23	
General Parameters	,,,,	- 102.7.12				
	0.44	OG < 1	0.10	NTU	2024-07-25	
Turbidity	0.44	06 1	0.10	1410	2024-01-20	
Microbiological Parameters				. 14. 14. Co.		
Coliforms, Total	<1	MAC = 0		CFU/100 mL	2024-07-24	
Background Colonies	>200	N/A		CFU/100 mL	2024-07-24	HT1,
Heterotrophic Plate Count	7000	N/A	5	CFU/mL	2024-07-24	MIC15
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-07-24	
Total Metals						

Caring About Results, Obviously.





REPORTED TO

Quesnel, City of

**PROJECT** 

Bi-Weekly - Third Week

WORK ORDER

24G3113

REPORTED

2024-07-31 11:42

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94F7 - S-Chew Rd. (24G3113-07	/)   Matrix: Water   Sam	pled: 2024-07-23 1	2:00			
Field Parameters						
Temperature, field	12.2	AO ≤ 15		°C	2024-07-23	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-07-25	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-07-24	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-07-24	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-07-24	
Total Metals						
Manganese, total	0.162	MAC = 0.12	0.00020	mg/L	2024-07-26	
WT# 21D9B - Bulk Water Site 1 (24G Field Parameters Temperature, field	3113-08)   Matrix: Wate	r   <b>Sampled: 2024-</b> AO ≤ 15	07-23 13:10	°C	2024-07-23	
General Parameters						
Turbidity	0.19	OG < 1	0.10	NTU	2024-07-25	
Microbiological Parameters						
Coliforms, Total	1	MAC = 0	1	CFU/100 mL	2024-07-24	
	< 5	N/A	5	CFU/mL	2024-07-24	HT1
Heterotrophic Plate Count				50.00 A 50.00 C C C C C C C C C C C C C C C C C C		
Heterotrophic Plate Count  E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-07-24	
The same of the same same same same same same same sam	< 1	MAC = 0	1	CFU/100 mL	2024-07-24	

## Sample Qualifiers:

HT1 The sample was prepared and/or analyzed past the recommended holding time.

HT3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.

MIC15 The final result is estimated due to a high bacterial count.



## CERTIFICATE OF ANALYSIS



Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

PO NUMBER

PROJECT

Bi-Weekly - Third Week

**PROJECT INFO** 

WORK ORDER

24H2712

RECEIVED / TEMP

2024-08-21 14:16 / 8.8°C

REPORTED **COC NUMBER**  2024-08-28 09:24

No Number

#### Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

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Authorized By:

**Brent Whitehead** Account Manager which

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Microbiological Parameters

Heterotrophic Plate Count

Coliforms, Total

Manganese, total

E. coli

Total Metals

	City of - Third Week			WORK ORDER REPORTED	24H2712 2024-08-2	8 09:24
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94E6 - S-Carradice Rd.	(24H2712-01)   Matrix: Water	Sampled: 2024-08-	20 09:20			
Field Parameters						
Temperature, field	11.3	AO ≤ 15		°C	2024-08-20	
General Parameters						
Turbidity	0.12	OG < 1	0.10	NTU	2024-08-24	HT1
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-08-21	НТ3
Heterotrophic Plate Count	< 5	N/A	-/-	CFU/mL	2024-08-21	HT1
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-08-21	HT3
Total Metals						
Manganese, total	0.0143	MAC = 0.12	0.00020	ma/L	2024-08-25	
	2712-02)   Matrix: Water   Sam <sub>l</sub>	pled: 2024-08-20 09	9:50			
WT# 94F1 - S-Dixon St. (24H			9:50	***	2024 00 20	
WT# 94F1 - S-Dixon St. (24H: Field Parameters Temperature, field	2712-02)   Matrix: Water   Sam 14.0	pled: <b>2024-08-20 0</b> 9 AO ≤ 15	9:50	°C	2024-08-20	
WT# 94F1 - S-Dixon St. (24H: Field Parameters Temperature, field General Parameters	14.0	AO ≤ 15				
WT# 94F1 - S-Dixon St. (24H: Field Parameters Temperature, field				°C NTU	2024-08-20	HT1
WT# 94F1 - S-Dixon St. (24H: Field Parameters Temperature, field General Parameters	14.0	AO ≤ 15				НТ1
WT# 94F1 - S-Dixon St. (24H: Field Parameters Temperature, field General Parameters Turbidity	14.0	AO ≤ 15	0.10			HT1
WT# 94F1 - S-Dixon St. (24H) Field Parameters Temperature, field General Parameters Turbidity Microbiological Parameters	14.0 0.16	AO ≤ 15  OG < 1  MAC = 0  N/A	0.10	NTU	2024-08-24	
WT# 94F1 - S-Dixon St. (24H: Field Parameters Temperature, field General Parameters Turbidity Microbiological Parameters Coliforms, Total	0.16 < 1	AO ≤ 15  OG < 1  MAC = 0	0.10 1 5	NTU CFU/100 mL	2024-08-24	HT3
WT# 94F1 - S-Dixon St. (24H: Field Parameters Temperature, field General Parameters Turbidity Microbiological Parameters Coliforms, Total Heterotrophic Plate Count	0.16 < 1 8	AO ≤ 15  OG < 1  MAC = 0  N/A	0.10 1 5	NTU  CFU/100 mL  CFU/mL	2024-08-24 2024-08-21 2024-08-21	HT3 HT1
WT# 94F1 - S-Dixon St. (24H: Field Parameters Temperature, field General Parameters Turbidity Microbiological Parameters Coliforms, Total Heterotrophic Plate Count E. coli	0.16 < 1 8	AO ≤ 15  OG < 1  MAC = 0  N/A	0.10 1 5	NTU  CFU/100 mL  CFU/mL  CFU/100 mL	2024-08-24 2024-08-21 2024-08-21	HT3 HT1
WT# 94F1 - S-Dixon St. (24H: Field Parameters Temperature, field General Parameters Turbidity Microbiological Parameters Coliforms, Total Heterotrophic Plate Count E. coli Total Metals Manganese, total	14.0 0.16 < 1 8 < 1	$AO \le 15$ $OG < 1$ $MAC = 0$ $N/A$ $MAC = 0$ $MAC = 0.12$	0.10 1 5 1	NTU  CFU/100 mL  CFU/mL  CFU/100 mL	2024-08-24 2024-08-21 2024-08-21 2024-08-21	HT3 HT1
WT# 94F1 - S-Dixon St. (24H: Field Parameters Temperature, field General Parameters Turbidity Microbiological Parameters Coliforms, Total Heterotrophic Plate Count E. coli Total Metals Manganese, total	0.16  < 1  8  < 1  0.0319	$AO \le 15$ $OG < 1$ $MAC = 0$ $N/A$ $MAC = 0$ $MAC = 0.12$	0.10 1 5 1	NTU  CFU/100 mL  CFU/mL  CFU/100 mL	2024-08-24 2024-08-21 2024-08-21 2024-08-21	HT3 HT1
WT# 94F1 - S-Dixon St. (24H: Field Parameters Temperature, field General Parameters Turbidity Microbiological Parameters Coliforms, Total Heterotrophic Plate Count E. coli Total Metals Manganese, total WT# 94F2 - S-Hospital (24H2	0.16  < 1  8  < 1  0.0319	$AO \le 15$ $OG < 1$ $MAC = 0$ $N/A$ $MAC = 0$ $MAC = 0.12$	0.10 1 5 1	NTU  CFU/100 mL  CFU/mL  CFU/100 mL	2024-08-24 2024-08-21 2024-08-21 2024-08-21	HT3 HT1
WT# 94F1 - S-Dixon St. (24H: Field Parameters Temperature, field General Parameters Turbidity Microbiological Parameters Coliforms, Total Heterotrophic Plate Count E. coli Total Metals Manganese, total WT# 94F2 - S-Hospital (24H2) Field Parameters	0.16  < 1  8  < 1  0.0319  2712-03)   Matrix: Water   Samp	AO ≤ 15  OG < 1  MAC = 0  N/A  MAC = 0  MAC = 0  MAC = 0.12	0.10 1 5 1	NTU  CFU/100 mL  CFU/mL  CFU/100 mL  mg/L	2024-08-24 2024-08-21 2024-08-21 2024-08-21 2024-08-26	HT3 HT1

HT1

MAC = 0

N/A

MAC = 0

MAC = 0.12

1 CFU/100 mL

1 CFU/100 mL

5 CFU/mL

0.00020 mg/L

2024-08-21

2024-08-21

2024-08-21

2024-08-26

< 1

< 5

< 1

0.0653



REPORTED TO PROJECT	Quesnel, City of	WORK ORDER	24H2712
	Bi-Weekly - Third Week	REPORTED	2024-08-28 09:24
			Tarries No.

Roolor Britishing Time	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					V
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
VT# 94F3 - S-Nason St. (24H2712-04	)   Matrix: Water   Sam	pled: 2024-08-20 1	0:50			
ield Parameters						
Temperature, field	12.8	AO ≤ 15		°C	2024-08-20	
General Parameters						
Turbidity	0.10	OG < 1	0.10	NTU	2024-08-24	HT1
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-08-21	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-08-21	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-08-21	
Total Metals						
Manganese, total	0.0702	MAC = 0.12	0.00020	mg/L	2024-08-26	
Field Parameters	10.7	AO ≤ 15		°C	2024-08-20	
	No.				0004.00.00	
Temperature, field	10.7	VO = 12			2024-00-20	
General Parameters		Caracia M.	2.0%	22.0	0001	
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-08-24	HT1
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0		CFU/100 mL	2024-08-21	1 5-24
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-08-21	HT1
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-08-21	
E. coli Total Metals	<1	MAC = 0	1	CF0/100 ML	2024-08-21	
- 10 Tu	< 1 0.122	MAC = 0.12	0.00020		2024-08-21	
Total Metals  Manganese, total  WT# 94F6 - S-N Star South Hill (24H	0.122	MAC = 0.12	0.00020			
Total Metals  Manganese, total  WT# 94F6 - S-N Star South Hill (24H	0.122 2712-06)   Matrix: Wate	MAC = 0.12 r   Sampled: 2024-	0.00020	mg/L	2024-08-26	
Total Metals  Manganese, total  WT# 94F6 - S-N Star South Hill (24H	0.122	MAC = 0.12	0.00020			
Total Metals  Manganese, total  WT# 94F6 - S-N Star South Hill (24H	0.122 2712-06)   Matrix: Wate 10.0	MAC = 0.12  r   Sampled: 2024-  AO ≤ 15	0.00020 <b>08-20 13:00</b>	mg/L °C	2024-08-26	Topas S
Total Metals  Manganese, total  WT# 94F6 - S-N Star South Hill (24H)  Field Parameters  Temperature, field	0.122 2712-06)   Matrix: Wate	MAC = 0.12 r   Sampled: 2024-	0.00020 <b>08-20 13:00</b>	mg/L	2024-08-26	HT1
Total Metals  Manganese, total  WT# 94F6 - S-N Star South Hill (24H)  Field Parameters  Temperature, field  General Parameters	0.122 2712-06)   Matrix: Wate 10.0	MAC = 0.12  r   Sampled: 2024-  AO ≤ 15	0.00020 <b>08-20 13:00</b>	mg/L °C	2024-08-26	HT1
Total Metals  Manganese, total  WT# 94F6 - S-N Star South Hill (24H)  Field Parameters  Temperature, field  General Parameters  Turbidity	0.122 2712-06)   Matrix: Wate 10.0	MAC = 0.12  r   Sampled: 2024-  AO ≤ 15	0.00020 <b>08-20 13:00</b> 0.10	mg/L °C	2024-08-26	
Total Metals  Manganese, total  WT# 94F6 - S-N Star South Hill (24H  Field Parameters  Temperature, field  General Parameters  Turbidity  Microbiological Parameters	0.122 2712-06)   Matrix: Wate 10.0 < 0.10	MAC = 0.12  r   Sampled: 2024-  AO ≤ 15  OG < 1	0.00020 <b>08-20 13:00</b> 0.10 1	mg/L  °C  NTU  CFU/100 mL  CFU/mL	2024-08-20 2024-08-24 2024-08-21 2024-08-21	
Total Metals  Manganese, total  WT# 94F6 - S-N Star South Hill (24H  Field Parameters  Temperature, field  General Parameters  Turbidity  Microbiological Parameters  Coliforms, Total	0.122 2712-06)   Matrix: Wate 10.0 < 0.10	MAC = 0.12  r   Sampled: 2024-  AO ≤ 15  OG < 1  MAC = 0	0.00020 <b>08-20 13:00</b> 0.10 1	mg/L  °C  NTU  CFU/100 mL	2024-08-20 2024-08-24 2024-08-21	
Manganese, total  WT# 94F6 - S-N Star South Hill (24H  Field Parameters  Temperature, field  General Parameters  Turbidity  Microbiological Parameters  Coliforms, Total  Heterotrophic Plate Count	0.122 2712-06)   Matrix: Wate 10.0 < 0.10	MAC = 0.12  r   Sampled: 2024-  AO ≤ 15  OG < 1  MAC = 0  N/A	0.00020 <b>08-20 13:00</b> 0.10 1	mg/L  °C  NTU  CFU/100 mL  CFU/mL	2024-08-20 2024-08-24 2024-08-21 2024-08-21	HT1





REPORTED TO

Quesnel, City of

**PROJECT** 

Bi-Weekly - Third Week

WORK ORDER

24H2712

REPORTED

2024-08-28 09:24

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94F7 - S-Chew Rd. (24H2712-07	7)   Matrix: Water   Sam	pled: 2024-08-20 1	1:20			
Field Parameters						
Temperature, field	11.3	AO ≤ 15		°C	2024-08-20	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-08-24	HT1
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-08-21	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-08-21	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-08-21	
Total Metals						
Manganese, total	0.159	MAC = 0.12	0.00020	mg/L	2024-08-26	
WT# 21D9B - Bulk Water Site 1 (24H  Field Parameters  Temperature, field	2712-08)   Matrix: Wate	r   <b>Sampled: 2024-</b> AO ≤ 15	08-20 13:30	°C	2024-08-20	
General Parameters						
Turbidity	0.23	OG < 1	0.10	NTU	2024-08-24	HT1
Microbiological Parameters						
Coliforms, Total	<1	MAC = 0	1	CFU/100 mL	2024-08-21	
Heterotrophic Plate Count	8	N/A	5	CFU/mL	2024-08-21	HT1
E. coli	< 1	MAC = 0	- 1	CFU/100 mL	2024-08-21	
Total Metals						
Total Wetais						

## Sample Qualifiers:

HT1 The sample was prepared and/or analyzed past the recommended holding time.

HT3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.





## **APPENDIX 1: SUPPORTING INFORMATION**

REPORTED TO PROJECT

Quesnel, City of

Bi-Weekly - Third Week

WORK ORDER

24H2712

REPORTED

2024-08-28 09:24

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
Heterotrophic Plate Count in Water	SM 9215 D (2022)	Membrane Filtration / Membrane Filtration	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	1	Kelowna

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

#### Glossary of Terms:

RL Reporting Limit (default)

Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres
CFU/mL Colony Forming Units per millilitre

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

NTU Nephelometric Turbidity Units
OG Operational Guideline (treated water)

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

## **General Comments:**

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REPORTED TO Quesnel, City of PROJECT Bi-Weekly - Third Week

WORK ORDER

24G3113

REPORTED 2024-07-31 11:42

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	<b>✓</b>	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Heterotrophic Plate Count in Water	SM 9215 D (2022)	Membrane Filtration / Membrane Filtration	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCI Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	1	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	1	Kelowna

## Glossary of Terms:

RL Reporting Limit (default)

Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

>2 Greater than the specified Result

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres
CFU/mL Colony Forming Units per millilitre

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

NTU Nephelometric Turbidity Units
OG Operational Guideline (treated water)

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

#### General Comments:

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## **CERTIFICATE OF ANALYSIS**



Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

PO NUMBER

PROJECT

Bi-Weekly - Third Week

**PROJECT INFO** 

WORK ORDER

**COC NUMBER** 

2412228

RECEIVED / TEMP

2024-09-18 14:43 / 15.9°C

REPORTED

2024-09-25 15:07

No Number

#### Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks



We've Got Chemistry



Ahead of the Curve



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: https://www.caro.ca/terms-conditions

If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead Account Manager M what

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REPORTED TO Quesnel, City of WORK ORDER RE

2412228

EPORTED	2024-09-25

PROJECT Bi-Weekly - Third	Week			REPORTED	2024-09-2	25 15:07
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94E6 - S-Carradice Rd. (24l2228	3-01)   Matrix: Water   S	Sampled: 2024-09-1	7 08:40			
Field Parameters						
Temperature, field	10.9	AO ≤ 15		°C	2024-09-17	7
General Parameters						
Turbidity	0.26	OG < 1	0.10	NTU	2024-09-19	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-09-18	НТ3
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-09-18	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-09-18	НТ3
Total Metals						
Manganese, total	0.0550	MAC = 0.12	0.00020	mg/L	2024-09-20	
Field Parameters						
Temperature, field		10 - 15		***	2024 22 47	
a compared to the compared to	11.4	AO ≤ 15		°C	2024-09-17	
General Parameters						
Turbidity	0.12	OG < 1	0.10	NTU	2024-09-19	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-09-18	
Heterotrophic Plate Count	5	N/A	5	CFU/mL	2024-09-18	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-09-18	
Total Metals						
Manganese, total	0.00227	MAC = 0.12	0.00020	mg/L	2024-09-20	
WT# 94F2 - S-Hospital (24l2228-03)	Matrix: Water   Sample	ed: 2024-09-17 09:	30			
Field Parameters						
Temperature, field	11,2	AO ≤ 15		°C	2024-09-17	
General Parameters						
Turbidity	0.14	OG < 1	0.10	NTU	2024-09-19	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-09-18	НТ3
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-09-18	HT1
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-09-18	HT3
Total Metals						
Manganese, total	0.0215	MAC = 0.12	0.00020	ma/l	2024-09-20	



REPORTED TO	Quesnel, City of	WORK ORDER	2412228
PROJECT	Bi-Weekly - Third Week	REPORTED	2024-09-25 15:07

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
NT# 94F3 - S-Nason St. (24I2228-04)	Matrix: Water   Samp	led: 2024-09-17 11	:50			
Field Parameters						
Temperature, field	11.7	AO ≤ 15		°C	2024-09-17	
General Parameters						
Turbidity	0.14	OG < 1	0.10	NTU	2024-09-19	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-09-18	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-09-18	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-09-18	
Total Metals						
Manganese, total	0.108	MAC = 0.12	0.00020	mg/L	2024-09-20	
Field Parameters  Temperature, field	12.1	AO ≤ 15		°C	2024-09-17	
WT# 94F6 - S-N Star South Hill (24l2						
Temperature, field	12.1	AO ≤ 15		°C	2024-09-17	
General Parameters						
Turbidity	0.30	OG < 1	0.10	NTU	2024-09-19	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-09-18	
Heterotrophic Plate Count	10	N/A	5	CFU/mL	2024-09-18	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-09-18	
Total Metals						
Manganese, total	0.158	MAC = 0.12	0.00020	mg/L	2024-09-20	
WT# 94F7 - S-Chew Rd. (24l2228-06	)   Matrix: Water   Samp	oled: 2024-09-17 13	3:00			
Field Parameters		W. C. C.		16.5		
Temperature, field	12.0	AO ≤ 15		°C	2024-09-17	
General Parameters						
	< 0.10	OG < 1	0.10	NTU	2024-09-19	
Turbidity						
Turbidity  Microbiological Parameters						
20100-	< 1	MAC = 0	1	CFU/100 mL	2024-09-18	
Microbiological Parameters	< 1 < 5	MAC = 0 N/A		CFU/100 mL CFU/mL	2024-09-18 2024-09-18	HT1
Microbiological Parameters Coliforms, Total			5			HT1
Microbiological Parameters  Coliforms, Total  Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-09-18	HT1





REPORTED TO

Quesnel, City of

**PROJECT** 

Bi-Weekly - Third Week

WORK ORDER

2412228

REPORTED

2024-09-25 15:07

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 21D9B - Bulk Water Site 1 (24l2:	228-07)   Matrix: Water	Sampled: 2024-0	9-17 10:00			
Field Parameters						
Temperature, field	11.7	AO ≤ 15		°C	2024-09-17	
General Parameters						
Turbidity	0.20	OG < 1	0.10	NTU	2024-09-19	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-09-18	НТ3
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-09-18	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-09-18	HT3
Total Metals						
Manganese, total	0.0579	MAC = 0.12	0.00020	ma/l	2024-09-20	

## Sample Qualifiers:

HT1 The sample was prepared and/or analyzed past the recommended holding time.

HT3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.



## APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT

Quesnel, City of

Bi-Weekly - Third Week

WORK ORDER

2412228

REPORTED 2024-09-25 15:07

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
Heterotrophic Plate Count in Water	SM 9215 D (2022)	Membrane Filtration / Membrane Filtration	<b>✓</b>	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	1	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	1	Kelowna

### Glossary of Terms:

RL Reporting Limit (default)

< Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres
CFU/mL Colony Forming Units per millilitre

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

NTU Nephelometric Turbidity Units
OG Operational Guideline (treated water)

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS



Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

WORK ORDER

24J0558

PO NUMBER

PROJECT

**PROJECT INFO** 

Bi-Weekly - First Week

RECEIVED / TEMP

2024-10-03 14:25 / 11.3°C

REPORTED

2024-10-09 11:18

COC NUMBER

No Number

#### Introduction:

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It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

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If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead Account Manager M wished

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REPORTED TO Quesnel, City of Bi-Weekly - First	Week			WORK ORDER REPORTED	24J0558 2024-10-0	9 11:18
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
94E4 S Airport (24J0558-01)   Matri	x: Ground Water   Samp	led: 2024-10-02 09	:50			
Field Parameters						
Temperature, field	9.1	AO ≤ 15		°C	2024-10-02	
General Parameters						
Turbidity	0.17	OG < 1	0.10	NTU	2024-10-05	
Microbiological Parameters			77.77			
Coliforms, Total	<1	MAC = 0	1	CFU/100 mL	2024-10-03	
Heterotrophic Plate Count	6	N/A		CFU/mL	2024-10-03	HT1
E. coli	< 1	MAC = 0		CFU/100 mL	2024-10-03	111.1
Total Metals						
Manganese, total	0.00221	MAC = 0.12	0.00020	mg/L	2024-10-07	
Field Parameters  Temperature, field	9.0	AO ≤ 15		°C	2024-10-02	
Temperature, field	9.0	AO ≤ 15		°C	2024-10-02	
General Parameters						
Turbidity	0.12	OG < 1	0.10	NTU	2024-10-05	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-10-03	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-10-03	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-10-03	
Total Metals						
Manganese, total	0.00231	MAC = 0.12	0.00020	mg/L	2024-10-06	
94E7 S Marsh Dr. (24J0558-03)   Ma	atrix: Ground Water   Sa	mpled: 2024-10-02	11:10			
Field Parameters						
Temperature, field	9.6	AO ≤ 15		°C	2024-10-02	
General Parameters						
Turbidity	0.11	OG < 1	0.10	NTU	2024-10-05	
Microbiological Borometers						
Microbiological Parameters	< 1	MAC = 0	1	CFU/100 mL	2024-10-03	
		1411 10 - 0				
Coliforms, Total		N/A	5	CFU/mL	2024-10-03	HT1
	< 5 < 1	N/A MAC = 0		CFU/mL CFU/100 mL	2024-10-03 2024-10-03	HT1
Coliforms, Total Heterotrophic Plate Count	< 5					HT1



REPORTED TO PROJECT

Quesnel, City of

Bi-Weekly - First Week

WORK ORDER REPORTED 24J0558

TED 2024-10-09 11:18

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
94E8 S Graham Ave. (24J0558-04)   M	latrix: Ground Water	Sampled: 2024-10-	02 11:50			
Field Parameters						
Temperature, field	9.6	AO ≤ 15		°C	2024-10-02	
General Parameters						
Turbidity	0.17	OG < 1	0.10	NTU	2024-10-05	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-10-03	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-10-03	HT1
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-10-03	
Total Metals						
Manganese, total	0.0197	MAC = 0.12	0.00020	mg/L	2024-10-07	
		10 5 15		*6	2024 40 00	
Field Parameters						
Temperature, field	9.1	AO ≤ 15		°C	2024-10-02	
General Parameters						
Turbidity	0.10	OG < 1	0.10	NTU	2024-10-05	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0		CFU/100 mL	2024-10-03	WAT ARE
	< 5	N/A		CFU/mL	2024-10-03	HT1
Heterotrophic Plate Count				CFU/100 mL	2024-10-03	
Heterotrophic Plate Count  E. coli	<1	MAC = 0				
		MAC = 0				
E. coli		MAC = 0 MAC = 0.12	0.00020	mg/L	2024-10-06	
E. coli  Total Metals  Manganese, total  94F0 S Pedersen Rd. (24J0558-06)   I	0.0150	MAC = 0.12	0.00020	mg/L	2024-10-06	
E. coli  Total Metals  Manganese, total  94F0 S Pedersen Rd. (24J0558-06)   I	< 1 0.0150 Matrix: Ground Water	MAC = 0.12	0.00020	mg/L °C	2024-10-06	
E. coli  Total Metals  Manganese, total  94F0 S Pedersen Rd. (24J0558-06)   I  Field Parameters  Temperature, field	0.0150	MAC = 0.12	0.00020			
E. coli  Total Metals  Manganese, total  94F0 S Pedersen Rd. (24J0558-06)   I  Field Parameters  Temperature, field  General Parameters	< 1 0.0150 Matrix: Ground Water	MAC = 0.12	0.00020 0-02 15:30			
E. coli  Total Metals  Manganese, total  94F0 S Pedersen Rd. (24J0558-06)   I  Field Parameters  Temperature, field  General Parameters  Turbidity	< 1 0.0150 Matrix: Ground Water 9.3	MAC = 0.12   <b>Sampled: 2024-10</b> AO ≤ 15	0.00020 0-02 15:30	°C	2024-10-02	
E. coli  Total Metals  Manganese, total  94F0 S Pedersen Rd. (24J0558-06)   I  Field Parameters  Temperature, field  General Parameters  Turbidity  Microbiological Parameters	< 1 0.0150 Matrix: Ground Water 9.3 0.11	MAC = 0.12   Sampled: 2024-10   AO ≤ 15   OG < 1	0.00020 0 <b>-02 15:30</b> 0.10	°C NTU	2024-10-02 2024-10-05	
E. coli  Total Metals  Manganese, total  94F0 S Pedersen Rd. (24J0558-06)   I  Field Parameters  Temperature, field  General Parameters  Turbidity  Microbiological Parameters  Coliforms, Total	< 1 0.0150  Matrix: Ground Water 9.3 0.11 < 1	MAC = 0.12    Sampled: 2024-10  AO ≤ 15  OG < 1  MAC = 0	0.00020 0-02 15:30 0.10	°C  NTU  CFU/100 mL	2024-10-02	HT1
E. coli  Total Metals  Manganese, total  94F0 S Pedersen Rd. (24J0558-06)   I  Field Parameters  Temperature, field  General Parameters  Turbidity  Microbiological Parameters	< 1 0.0150 Matrix: Ground Water 9.3 0.11	MAC = 0.12   Sampled: 2024-10   AO ≤ 15   OG < 1	0.00020 0-02 15:30 0.10	°C NTU	2024-10-02 2024-10-05 2024-10-03	HT1
E. coli  Total Metals  Manganese, total  94F0 S Pedersen Rd. (24J0558-06)   I  Field Parameters  Temperature, field  General Parameters  Turbidity  Microbiological Parameters  Coliforms, Total  Heterotrophic Plate Count	< 1 0.0150  Matrix: Ground Water 9.3 0.11 < 1 < 5	MAC = 0.12    Sampled: 2024-10  AO ≤ 15  OG < 1  MAC = 0  N/A	0.00020 0-02 15:30 0.10	°C  NTU  CFU/100 mL  CFU/mL	2024-10-02 2024-10-05 2024-10-03 2024-10-03	HT1



REPORTED TO

Quesnel, City of

**PROJECT** 

Bi-Weekly - First Week

WORK ORDER

24J0558

REPORTED

2024-10-09 11:18

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
35D91 New Carson Pit (24J0558-07)	Matrix: Ground Water	r   Sampled: 2024-	10-02 14:30			
Field Parameters						
Temperature, field	9.4	AO ≤ 15		°C	2024-10-02	
General Parameters						
Turbidity	0.16	OG < 1	0.10	NTU	2024-10-05	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-10-03	
Heterotrophic Plate Count	5	N/A	5	CFU/mL	2024-10-03	HT1
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-10-03	
Total Metals						
Manganese, total	0.00789	MAC = 0.12	0.00020	mg/L	2024-10-06	
179CA S Dennis Rd. (24J0558-08)   1	Matrix: Ground Water I	Compled: 2024 40				
	9.7	AO ≤ 15	-02 15:00	°C	2024-10-02	
Field Parameters Temperature, field			-02 15:00	°C	2024-10-02	
Field Parameters Temperature, field				°C NTU	2024-10-02	
Field Parameters  Temperature, field  General Parameters	9.7	AO ≤ 15				
Field Parameters Temperature, field General Parameters Turbidity	9.7	AO ≤ 15	0.10			
Field Parameters Temperature, field General Parameters Turbidity Microbiological Parameters	9.7 0.18	AO ≤ 15 OG < 1	0.10	NTU	2024-10-05	HT1
Field Parameters Temperature, field General Parameters Turbidity Microbiological Parameters Coliforms, Total	9.7 0.18 < 1	AO ≤ 15  OG < 1  MAC = 0	0.10 1 5	NTU CFU/100 mL	2024-10-05	HT1
Field Parameters Temperature, field  General Parameters Turbidity  Microbiological Parameters  Coliforms, Total Heterotrophic Plate Count	9.7 0.18 < 1 < 5	AO ≤ 15  OG < 1  MAC = 0  N/A	0.10 1 5	NTU  CFU/100 mL  CFU/mL	2024-10-05 2024-10-03 2024-10-03	HT1

#### Sample Qualifiers:

HT1 The sample was prepared and/or analyzed past the recommended holding time.





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Quesnel, City of

PROJECT

Bi-Weekly - First Week

WORK ORDER

24J0558

REPORTED

2024-10-09 11:18

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Heterotrophic Plate Count in Water	SM 9215 D (2022)	Membrane Filtration / Membrane Filtration	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	<b>~</b>	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	1	Kelowna

Glossary of Terms:

RL Reporting Limit (default)

< Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres
CFU/mL Colony Forming Units per millilitre

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

NTU Nephelometric Turbidity Units
OG Operational Guideline (treated water)

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

ATTENTION

Joe Law

WORK ORDER

24J2565

PO NUMBER

**PROJECT** 

**PROJECT INFO** 

Bi-Weekly - Third Week

RECEIVED / TEMP REPORTED

2024-10-18 13:15 / 7.1°C 2024-10-24 08:59

**COC NUMBER** 

No Number

#### Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks



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Ahead of the Curve



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If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

**Brent Whitehead** Account Manager which

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REPORTED TO Quesnel, City of PROJECT Bi-Weekly - Third W	/eek			WORK ORDER REPORTED	24J2565 2024-10-2	4 08:59
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94E6 - S-Carradice Rd. (24J2565	-01)   Matrix: Water   S	Sampled: 2024-10-	17 09:30			
Field Parameters						
Temperature, field	8.7	AO ≤ 15		°C	2024-10-17	
General Parameters						
Turbidity	0.13	OG < 1	0.10	NTU	2024-10-20	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-10-18	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-10-18	HT1
E. coli	< 1	MAC = 0		CFU/100 mL	2024-10-18	
Total Metals						
Manganese, total	0.0222	MAC = 0.12	0.00020	mg/L	2024-10-20	
Field Parameters Temperature, field	9.9	AO ≤ 15		°C	2024-10-17	
Temperature, field	9.9	AO ≤ 15		°C	2024-10-17	
General Parameters						
Turbidity	0.14	OG < 1	0.10	NTU	2024-10-20	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-10-18	
Heterotrophic Plate Count	60	N/A	5	CFU/mL	2024-10-18	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-10-18	
Total Metals						
Manganese, total	0.00800	MAC = 0.12	0.00020	mg/L	2024-10-20	
WT# 94F2 - S-Hospital (24J2565-03)	Matrix: Water   Samp	led: 2024-10-17 10:	:00			
Field Parameters						
Temperature, field	11.1	AO ≤ 15		°C	2024-10-17	
General Parameters						
	0.29	OG < 1	0.10	NTU	2024-10-20	
Turbidity						
Turbidity  Microbiological Parameters						
	< 1	MAC = 0	1	CFU/100 mL	2024-10-18	
Microbiological Parameters	< 1 < 5	MAC = 0 N/A		CFU/100 mL	2024-10-18 2024-10-18	HT1
Microbiological Parameters  Coliforms, Total			5	- CONTROL - CONT		HT1
Microbiological Parameters  Coliforms, Total  Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-10-18	HT1



REPORTED TO Quesnel, City of

WORK ORDER

24J2565

PROJECT Bi-Weekly - Third	vveek			REPORTED	2024-10-2	4 00.38
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
NT# 94F3 - S-Nason St. (24J2565-04	1)   Matrix: Water   Sam	oled: 2024-10-17 11	1:30			
Field Parameters						
Temperature, field	13.0	AO ≤ 15		°C	2024-10-17	
General Parameters						
Turbidity	0.22	OG < 1	0.10	NTU	2024-10-20	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-10-18	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-10-18	HT1
E. coli	<1	MAC = 0		CFU/100 mL	2024-10-18	*****
Total Metals						
Manganese, total	0.108	MAC = 0.12	0.00020	mg/L	2024-10-20	
Field Parameters					a 57 37	
Field Parameters						
Temperature, field	9.3	AO ≤ 15		°C	2024-10-17	
General Parameters						
Turbidity	0.15	OG < 1	0.10	NTU	2024-10-20	
Microbiological Parameters						
Coliforms, Total	<1	MAC = 0	1	CFU/100 mL	2024-10-18	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-10-18	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-10-18	
Total Metals						
Manganese, total	0.131	MAC = 0.12	0.00020	mg/L	2024-10-20	
WT# 94F6 - S-N Star South Hill (24J Field Parameters	2565-06)   Matrix: Wate	r   Sampled: 2024-	10-17 13:20			
Temperature, field	10.0	AO ≤ 15		°C	2024-10-17	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-10-20	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-10-18	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-10-18	HT1
	< 1	MAC = 0	1	CFU/100 mL	2024-10-18	
E. coli						
Total Metals						



REPORTED TO

Quesnel, City of

**PROJECT** 

Bi-Weekly - Third Week

WORK ORDER

24J2565

2024-10-20

2024-10-18

2024-10-18

2024-10-18

2024-10-22

HT1

REPORTED

2024-10-24 08:59

a face with a second of the se						
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94F7 - S-Chew Rd. (24J2565-07	)   Matrix: Water   Sam	pled: 2024-10-17 1	4:00			
Field Parameters						
Temperature, field	12.1	AO ≤ 15		°C	2024-10-17	
General Parameters						
Turbidity	0.51	OG < 1	0.10	NTU	2024-10-20	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-10-18	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-10-18	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-10-18	
Total Metals						
Manganese, total	0.157	MAC = 0.12	0.00020	mg/L	2024-10-22	
WT# 21D9B - Bulk Water Site 1 (24J2	2565-08)   Matrix: Wate	r   Sampled: 2024-	10-17 14:30			
Field Parameters						
Temperature, field	11.2	AO ≤ 15		°C	2024-10-17	
General Parameters						

OG < 1

MAC = 0

N/A

MAC = 0

MAC = 0.12

0.10 NTU

0.00020 mg/L

1 CFU/100 mL

1 CFU/100 mL

5 CFU/mL

0.39

< 1

< 5

0.0213

Samn	1.	0	lifiana.

Microbiological Parameters

Heterotrophic Plate Count

Turbidity

E. coli

Total Metals

Manganese, total

Coliforms, Total

HT1 The sample was prepared and/or analyzed past the recommended holding time.



REPORTED TO

Quesnel, City of

**PROJECT** 

Bi-Weekly - Third Week

WORK ORDER

24J2565

REPORTED

2024-10-24 08:59

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
Heterotrophic Plate Count in Water	SM 9215 D (2022)	Membrane Filtration / Membrane Filtration	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCI Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓-	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	1	Kelowna

#### Glossary of Terms:

RL Reporting Limit (default)

Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

Colony Forming Units per 100 millilitres CFU/100 mL Colony Forming Units per millilitre CFU/mL

Maximum Acceptable Concentration (health based) MAC

Milligrams per litre mg/L

Nephelometric Turbidity Units NTU Operational Guideline (treated water) OG

**EPA** United States Environmental Protection Agency Test Methods

Standard Methods for the Examination of Water and Wastewater, American Public Health Association SM

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Quesnel, City of

1350 Sword Ave

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**ATTENTION** 

Joe Law

WORK ORDER

24K1520

PO NUMBER

PROJECT

PROJECT INFO

Bi-Weekly - Third Week

RECEIVED / TEMP

2024-11-13 13:00 / 6.7°C

REPORTED

2024-11-19 09:04

COC NUMBER

No Number

#### Introduction:

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Authorized By:

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REPORTED TO Quesnel, PROJECT Bi-Weekl	City of y - Third Week			WORK ORDER REPORTED	24K1520 2024-11-1	9 09:04
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94E6 - S-Carradice Rd.	. (24K1520-01)   Matrix: Water	Sampled: 2024-11-	-12 09:30			
Field Parameters						
Temperature, field	8.6	AO ≤ 15		°C	2024-11-12	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-11-14	
Microbiological Parameters						
Coliforms, Total	<1	MAC = 0	1	CFU/100 mL	2024-11-13	HT3
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-11-13	HT1
E. coli	<1	MAC = 0		CFU/100 mL	2024-11-13	HT3
Total Metals		7700 000 - 470		2002-00 3-0030-0030-0		
Manganese, total	0.106	MAC = 0.12	0.00020	ma/l	2024-11-15	
WT# 94F1 - S-Dixon St. (24k	(1520-02)   Matrix: Water   Sam	pled: 2024-11-12 11	1:40			
Field Parameters						
Temperature, field	8.4	AO ≤ 15		°C	2024-11-12	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-11-14	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-11-13	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-11-13	HT1
E. coli	<1	MAC = 0		CFU/100 mL	2024-11-13	
Total Metals						
Manganese, total	0.0133	MAC = 0.12	0.00020	ma/L	2024-11-15	
	1520-03)   Matrix: Water   Samp	led: 2024-11-12 10		3		
Field Parameters						
Temperature, field	8.1	AO ≤ 15		°C	2024-11-12	
General Parameters						
Turbidity	0.11	OG < 1	0.10	NTU	2024-11-14	
Microbiological Parameters	<b>3.11</b>	7.5	0.10			
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-11-13	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-11-13	HT1
E. coli	<1	MAC = 0		CFU/100 mL	2024-11-13	1,10.1
Total Metals						
Manganese, total	0.0684	MAC = 0.12	0.00020	ma/l	2024 11 15	
manganese, total	0.0684	IVIAC = 0.12	0.00020	mg/L	2024-11-15	



REPORTED TO

Quesnel, City of

PROJECT Bi-V

Bi-Weekly - Third Week

WORK ORDER

24K1520

REPORTED 2024-11-19 09:04

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
NT# 94F3 - S-Nason St. (24K1520-04	)   Matrix: Water   Sam	pled: 2024-11-12 1	0:55			
Field Parameters						
Temperature, field	8.4	AO ≤ 15		°C	2024-11-12	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-11-14	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-11-13	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-11-13	HT1
E. coli	< 1	MAC = 0		CFU/100 mL	2024-11-13	
Total Metals						
Manganese, total	0.0902	MAC = 0.12	0.00020	mg/L	2024-11-15	
	8.1	AO ≤ 15		°C	2024-11-12	
Field Parameters						
Temperature, field	8.1	AO ≤ 15		*C	2024-11-12	
General Parameters						
Turbidity	1.06	OG < 1	0.10	NTU	2024-11-14	RE2
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-11-13	
		A 1/A		CFU/mL	2024-11-13	HT1
Heterotrophic Plate Count	< 5	N/A	.5	15,600,000,000		
	< 5 < 1	MAC = 0		CFU/100 mL	2024-11-13	
Heterotrophic Plate Count				CFU/100 mL	2024-11-13	
Heterotrophic Plate Count E. coli					2024-11-13	
Heterotrophic Plate Count E. coli  Total Metals  Manganese, total  WT# 94F6 - S-N Star South Hill (24K)	< 1 0.119 1520-06)   Matrix: Wate	MAC = 0.12 r   Sampled: 2024-	0.00020	mg/L	2024-11-15	
Heterotrophic Plate Count E. coli  Total Metals  Manganese, total  WT# 94F6 - S-N Star South Hill (24K	0.119	MAC = 0.12	0.00020			
Heterotrophic Plate Count E. coli  Total Metals Manganese, total  WT# 94F6 - S-N Star South Hill (24K)  Field Parameters Temperature, field  General Parameters	< 1 0.119 1520-06)   Matrix: Wate 8.2	MAC = 0.12  r   Sampled: 2024-  AO ≤ 15	0.00020	mg/L °C	2024-11-15	
Heterotrophic Plate Count E. coli  Total Metals  Manganese, total  WT# 94F6 - S-N Star South Hill (24K)  Field Parameters  Temperature, field	< 1 0.119 1520-06)   Matrix: Wate	MAC = 0.12 r   Sampled: 2024-	0.00020	mg/L	2024-11-15	
Heterotrophic Plate Count E. coli  Total Metals Manganese, total  WT# 94F6 - S-N Star South Hill (24K)  Field Parameters Temperature, field  General Parameters	< 1 0.119 1520-06)   Matrix: Wate 8.2	MAC = 0.12  r   Sampled: 2024-  AO ≤ 15	0.00020	mg/L °C	2024-11-15	
Heterotrophic Plate Count E. coli  Total Metals  Manganese, total  WT# 94F6 - S-N Star South Hill (24K)  Field Parameters  Temperature, field  General Parameters  Turbidity	< 1 0.119 1520-06)   Matrix: Wate 8.2	MAC = 0.12  r   Sampled: 2024-  AO ≤ 15	0.00020 11-12 14:30 0.10	mg/L °C	2024-11-15	
Heterotrophic Plate Count E. coli  Total Metals Manganese, total  WT# 94F6 - S-N Star South Hill (24K)  Field Parameters Temperature, field  General Parameters Turbidity  Microbiological Parameters	< 1 0.119 1520-06)   Matrix: Wate 8.2 < 0.10	MAC = 0.12  r   Sampled: 2024-  AO ≤ 15  OG < 1	0.00020 11-12 14:30 0.10	mg/L °C	2024-11-15 2024-11-12 2024-11-14	HT1
Heterotrophic Plate Count E. coli  Total Metals Manganese, total  WT# 94F6 - S-N Star South Hill (24K)  Field Parameters Temperature, field  General Parameters Turbidity  Microbiological Parameters Coliforms, Total	< 1 0.119 1520-06)   Matrix: Wate 8.2 < 0.10	MAC = 0.12  r   Sampled: 2024-  AO ≤ 15  OG < 1  MAC = 0	0.00020 11-12 14:30 0.10	mg/L  °C  NTU  CFU/100 mL	2024-11-15 2024-11-12 2024-11-14 2024-11-13	HT1
Heterotrophic Plate Count E. coli  Total Metals Manganese, total  WT# 94F6 - S-N Star South Hill (24K)  Field Parameters Temperature, field  General Parameters Turbidity  Microbiological Parameters  Coliforms, Total Heterotrophic Plate Count	< 1 0.119 1520-06)   Matrix: Wate 8.2 < 0.10 < 1 < 5	MAC = 0  MAC = 0.12  r   Sampled: 2024-  AO ≤ 15  OG < 1  MAC = 0  N/A	0.00020 11-12 14:30 0.10	mg/L  °C  NTU  CFU/100 mL  CFU/mL	2024-11-12 2024-11-14 2024-11-13 2024-11-13	HT1





REPORTED TO Quesnel, City of PROJECT Bi-Weekly - Third Week

WORK ORDER 24 REPORTED 20

24K1520 2024-11-19 09:04

2024-11-15

PROJECT BI-Weekly - Third	vveek			KEPOKTED	2024-11-1	9 09.04
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94F7 - S-Chew Rd. (24K1520-07	)   Matrix: Water   Sam	pled: 2024-11-12 1	2:40			
Field Parameters						
Temperature, field	9.1	AO ≤ 15		°C	2024-11-12	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-11-14	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-11-13	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-11-13	HT1
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-11-13	
Total Metals						
Manganese, total	0.167	MAC = 0.12	0.00020	mg/L	2024-11-15	
WT# 21D9B - Bulk Water Site 1 (24K) Field Parameters Temperature, field	1520-08)   Matrix: Wate	er   <b>Sampled: 2024</b> - AO ≤ 15	11-12 11:56	°C	2024-11-12	
General Parameters						
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-11-14	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-11-13	
Heterotrophic Plate Count	< 5	N/A	5	CFU/mL	2024-11-13	HT1
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-11-13	
Total Metals						

MAC = 0.12

0.00020 mg/L

#### Sample Qualifiers:

Manganese, total

HT1 The sample was prepared and/or analyzed past the recommended holding time.

HT3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.

0.0823

RE2 Result was confirmed by re-analysis prior to reporting.





REPORTED TO

Quesnel, City of

PROJECT

Bi-Weekly - Third Week

WORK ORDER

24K1520

REPORTED

2024-11-19 09:04

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	<b>√</b>	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Heterotrophic Plate Count in Water	SM 9215 D (2022)	Membrane Filtration / Membrane Filtration	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	✓	Kelowna

#### Glossary of Terms:

RL Reporting Limit (default)

< Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres
CFU/mL Colony Forming Units per millilitre

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

NTU Nephelometric Turbidity Units
OG Operational Guideline (treated water)

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

#### **General Comments:**

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Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted red. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do <u>not</u> take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager:hhannaoui@caro.ca

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REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

**WORK ORDER** 

24L1308

PO NUMBER

**PROJECT** PROJECT INFO

Bi-Weekly - Third Week

RECEIVED / TEMP REPORTED

2024-12-11 12:30 / 4.8°C

2024-12-18 10:23

**COC NUMBER** 

No Number

#### Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks



We've Got Chemistry



Ahead of the Curve



sample you collected You know that the after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We

It's simple. We figure the more working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Through research, regulation knowledge, and instrumentation, we are your analytical centre for knowledge you need, technical BEFORE you need it, so you can stay up to date and in the know.

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If you have any questions or concerns, please contact me at hhannaoui@caro.ca

Authorized By:

Hanane El Hannaoui Junior Account Manager

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REPORTED TO Quesnel, City of Bi-Weekly - Third Week				WORK ORDER REPORTED	24L1308 2024-12-1	8 10:23
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94E6 - S-Carradice Rd. (24L1308-01)	Matrix: Water	Sampled: 2024-12-	10 09:30			
Field Parameters					4	
Temperature, field	7.4	AO ≤ 15		°C	2024-12-10	
General Parameters						
Turbidity	0.22	OG < 1	0.10	NTU	2024-12-12	
Microbiological Parameters						
Coliforms, Total	<1	MAC = 0	1	CFU/100 mL	2024-12-11	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-12-11	HT1
E. coli	<1	MAC = 0		CFU/100 mL	2024-12-11	
Total Metals						
Manganese, total	0.0412	MAC = 0.12	0.00020	mg/L	2024-12-12	
Temperature, field  General Parameters	7.1	AO ≤ 15		°C	2024-12-10	
Field Parameters						
Turbidity	0.11	OG < 1	0.10	NTU	2024-12-12	
Microbiological Parameters	•		0.10		LVL! IL IL	
	- 1	MAC = 0	4	CEL//100!	2024 12 11	
Coliforms, Total Heterotrophic Plate Count	< 1	N/A		CFU/100 mL	2024-12-11	HT1
E. coli	< 1	MAC = 0		CFU/100 mL	2024-12-11	11.1.1
Total Metals						
Manganese, total	0.0148	MAC = 0.12	0.00020	ma/l	2024-12-13	
WT# 94F2 - S-Hospital (24L1308-03)   Matrix	x: Water   Samp	led: 2024-12-10 10				
Temperature, field	7.2	AO ≤ 15		°C	2024-12-10	
General Parameters						
Turbidity	0.18	OG < 1	0.10	NTU	2024-12-12	
Microbiological Parameters						
Coliforms, Total	<1	MAC = 0	1	CFU/100 mL	2024-12-11	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-12-11	HT1
E. coli	< 1	MAC = 0		CFU/100 mL	2024-12-11	2.30
Total Metals						



REPORTED TO PROJECT

Quesnel, City of

Bi-Weekly - Third Week

WORK ORDER

24L1308

REPORTED

2024-12-18 10:23

PROJECT BI-Weekly - I nird	vveek			REPORTED	2024-12-1	0 10.23
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
NT# 94F3 - S-Nason St. (24L1308-04	)   Matrix: Water   Sam	oled: 2024-12-10 11	1:30			
Field Parameters						
Temperature, field	7.4	AO ≤ 15		°C	2024-12-10	
General Parameters						
Turbidity	0.11	OG < 1	0.10	NTU	2024-12-12	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-12-11	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-12-11	HT1
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-12-11	
Total Metals						
Manganese, total	0.105	MAC = 0.12	0.00020	ma/L	2024-12-13	
Field Parameters  Temperature, field	7.6	AO ≤ 15		°C	2024-12-10	
	7.6	AO < 15		°C	2024-12-10	
General Parameters						
Turbidity	0.34	OG < 1	0.10	NTU	2024-12-12	
Microbiological Parameters	0.04	00 1	3.10			
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-12-11	
Heterotrophic Plate Count	< 5	N/A		CFU/mL	2024-12-11	HT1
E. coli	< 1	MAC = 0		CFU/100 mL	2024-12-11	1523
Total Metals						
Manganese, total	0.214	MAC = 0.12	0.00020	ma/l	2024-12-12	
			0.00020			
WT# 94F6 - S-N Star South Hill (24L		r   Sampled: 2024-				
	1308-06)   Matrix: Wate			°C	2024-12-10	
Field Parameters		r   Sampled: 2024-	12-10 13:45	°C	2024-12-10	
Field Parameters  Temperature, field		r   Sampled: 2024-	12-10 13:45			
Field Parameters Temperature, field General Parameters	7.5	r   <b>Sampled: 2024-</b> AO ≤ 15	12-10 13:45	°C	2024-12-10	
Field Parameters Temperature, field General Parameters Turbidity	7.5	r   <b>Sampled: 2024-</b> AO ≤ 15	<b>12-10 13:45</b> 0.10	°C	2024-12-10	
Field Parameters Temperature, field General Parameters Turbidity Microbiological Parameters	7.5 0.19	r   Sampled: 2024- AO ≤ 15 OG < 1	<b>12-10 13:45</b> 0.10	°C NTU	2024-12-10 2024-12-12	HT1
Field Parameters Temperature, field  General Parameters Turbidity  Microbiological Parameters  Coliforms, Total	7.5 0.19 < 1	r   Sampled: 2024- AO ≤ 15 OG < 1 MAC = 0	0.10 0.10	°C  NTU  CFU/100 mL	2024-12-10 2024-12-12 2024-12-11	HT1
Field Parameters Temperature, field  General Parameters Turbidity  Microbiological Parameters  Coliforms, Total Heterotrophic Plate Count	7.5 0.19 < 1 < 5	r   Sampled: 2024- AO ≤ 15  OG < 1  MAC = 0  N/A	0.10 0.10	°C  NTU  CFU/100 mL  CFU/mL	2024-12-10 2024-12-12 2024-12-11 2024-12-11	HT1



REPORTED TO Quesnel, City of PROJECT Bi-Weekly - Third Wee					WORK ORDER REPORTED	24L1308 2024-12-18 10:23	
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94F7 - S-Che	ew Rd. (24L1308-07)   Matrix	: Water   Sam	pled: 2024-12-10 1	2:00			
Field Parameters							
Temperature, field		7.6	AO ≤ 15		°C	2024-12-10	
General Parameters	3						
Turbidity		0.13	OG < 1	0.10	NTU	2024-12-12	
Microbiological Par	ameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-12-11	
Heterotrophic Plate	e Count	< 5	N/A	5	CFU/mL	2024-12-11	HT1
		< 1	MAC = 0	1	CFU/100 mL	2024-12-11	
E. coli							
Total Metals							
C III CO III C		0.160	MAC = 0.12	0.00020	mg/L	2024-12-13	
Total Metals  Manganese, total  WT# 21D9B - Bulk	k Water Site 1 (24L1308-08)				mg/L °C	2024-12-13	
Total Metals  Manganese, total  WT# 21D9B - Bull  Field Parameters		Matrix: Wate	r   Sampled: 2024-				
Total Metals  Manganese, total  WT# 21D9B - Bull  Field Parameters  Temperature, field		Matrix: Wate	r   Sampled: 2024-	12-10 13:20			
Total Metals  Manganese, total  WT# 21D9B - Bull  Field Parameters  Temperature, field  General Parameters	3	Matrix: Wate	<b>r   Sampled: 2024-</b> AO ≤ 15	12-10 13:20	°C	2024-12-10	
Total Metals  Manganese, total  WT# 21D9B - Bull  Field Parameters  Temperature, field  General Parameters  Turbidity	3	Matrix: Wate	<b>r   Sampled: 2024-</b> AO ≤ 15	<b>12-10 13:20</b> 0.10	°C	2024-12-10	
Total Metals  Manganese, total  WT# 21D9B - Bull  Field Parameters  Temperature, field  General Parameters  Turbidity  Microbiological Parameters	s rameters	Matrix: Wate 2.4 0.88	r   Sampled: 2024- AO ≤ 15 OG < 1	0.10	°C NTU	2024-12-10 2024-12-12	HT1
Total Metals  Manganese, total  WT# 21D9B - Bull  Field Parameters  Temperature, field  General Parameters  Turbidity  Microbiological Par  Coliforms, Total	s rameters	2.4 0.88	r   Sampled: 2024- AO ≤ 15 OG < 1 MAC = 0	0.10 15	°C NTU CFU/100 mL	2024-12-10 2024-12-12 2024-12-11	HT1
Total Metals  Manganese, total  WT# 21D9B - Bull  Field Parameters  Temperature, field  General Parameters  Turbidity  Microbiological Par  Coliforms, Total  Heterotrophic Plate	s rameters	2.4 0.88 < 1 < 5	r   Sampled: 2024- AO ≤ 15 OG < 1 MAC = 0 N/A	0.10 15	°C  NTU  CFU/100 mL  CFU/mL	2024-12-10 2024-12-12 2024-12-11 2024-12-11	HT1

HT1

The sample was prepared and/or analyzed past the recommended holding time.



REPORTED TO

Quesnel, City of

PROJECT Bi-Weekly - Third Week

WORK ORDER

24L1308

REPORTED

2024-12-18 10:23

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	/	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
Heterotrophic Plate Count in Water	SM 9215 D (2022)	Membrane Filtration / Membrane Filtration	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	✓	Kelowna

Glossary of Terms:

RL Reporting Limit (default)

< Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres
CFU/mL Colony Forming Units per millilitre

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

NTU Nephelometric Turbidity Units
OG Operational Guideline (treated water)

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

#### **General Comments:**

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REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

PO NUMBER **PROJECT** 

Semi Annually Distribution System

**PROJECT INFO** 

WORK ORDER

24D2893

RECEIVED / TEMP

2024-04-23 14:20 / 11.7°C

REPORTED

2024-04-30 12:58

**COC NUMBER** 

No Number

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Big Picture Sidekicks



We've Got Chemistry



Ahead of the Curve



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to important and expensive decisions (whew) is VERY important. We know that too.

It's simple. We figure the more you working with our members; the more engaged team likely you are to give us continued opportunities to support you.

Through research, knowledge, and instrumentation, we are your analytical centre for technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

(resample from 2024-04-16)

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If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

**Brent Whitehead** Account Manager which

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REPORTED TO Quesnel, City of PROJECT Semi Annually Distrib		ution System			WORK ORDER REPORTED	24D2893 2024-04-30 <b>12:58</b>	
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifier
WT# 94E4 - Airpor	t (24D2893-01)   Matrix: V	Water   Sampled	: 2024-04-22 10:00				
Field Parameters							
Temperature, field		6.5	AO ≤ 15		°C	2024-04-22	
General Parameters							
Turbidity		< 0.10	OG < 1	0.10	NTU	2024-04-25	
Microbiological Para	ameters					E \$ 2000 012 1 4 4 4 10	
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-04-23	
Heterotrophic Plate	Count	< 5	N/A		CFU/mL	2024-04-23	HT1
E. coli	10,000	< 1	MAC = 0		CFU/100 mL	2024-04-23	
WT# 94E5 - S Mills	Rd (24D2893-02)   Matri	x: Water   Samp	led: 2024-04-22 10:	:30			
Field Parameters							
Temperature, field		6.3	AO ≤ 15		°C	2024-04-22	
General Parameters							
Turbidity		< 0.10	OG < 1	0.10	NTU	2024-04-25	
Microbiological Para	ameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-04-23	
Heterotrophic Plate	Count	< 5	N/A		CFU/mL	2024-04-23	HT1
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-04-23	
Total Metals							
Copper, total		0.00875	MAC = 2	0.00040	mg/L	2024-04-26	
Iron, total		< 0.010	AO ≤ 0.3		mg/L	2024-04-26	
Lead, total		0.00020	MAC = 0.005	0.00020	mg/L	2024-04-26	
Manganese, total		0.00549	MAC = 0.12	0.00020		2024-04-26	
Zinc, total		< 0.0040	AO ≤ 5	0.0040	mg/L	2024-04-26	
Volatile Organic Con	npounds (VOC)						
Vinyl chloride		< 1.0	MAC = 2	1.0	μg/L	2024-04-26	
Surrogate: Toluene	-d8	82		70-130	%	2024-04-26	
WT# 94E7 - Marsh	Dr (24D2893-03)   Matrix	: Water   Sampl	ed: 2024-04-22 11:0	00			
Field Parameters							
Temperature, field		8.1	AO ≤ 15		°C	2024-04-22	
General Parameters							
General Parameters Turbidity		< 0.10	OG < 1	0.10	NTU	2024-04-25	
		< 0.10	OG < 1	0.10	NTU	2024-04-25	
Turbidity		< 0.10	OG < 1 MAC = 0		NTU CFU/100 mL	2024-04-25	



REPORTED TO Quesnel, City of Semi Annually Dis		ribution System			WORK ORDER REPORTED	24D2893 2024-04-30 <b>12:58</b>	
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifier
WT# 94E7 - Mars	h Dr (24D2893-03)   I	Matrix: Water   Sample	d: 2024-04-22 11:0	0, Continued			
Microbiological Pa	rameters, Continued						
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-04-23	
NT# 94E8 - S Gra	aham Dr (24D2893-04	4)   Matrix: Water   San	npled: 2024-04-22	13:30			
Field Parameters							
Temperature, field	Í	7.4	AO ≤ 15		°C	2024-04-22	
General Parameter							
Turbidity		< 0.10	OG < 1	0.10	NTU	2024-04-25	
Microbiological Pa	rameters						
Coliforms, Total	24:13:13:10 J	< 1	MAC = 0	1	CFU/100 mL	2024-04-23	
Heterotrophic Pla	te Count	< 5	N/A		CFU/mL	2024-04-23	HT1
E. coli	.5 500.11	<1	MAC = 0		CFU/100 mL	2024-04-23	
Temperature, field	d	6.1	AO ≤ 15		°C	2024-04-22	
remperature, nero		0.1	7.0 = 10				
Canaval Davamata							
	15	< 0.10	06 < 1	0.10	NITH	2024-04-25	
Turbidity		< 0.10	OG < 1	0.10	NTU	2024-04-25	
Turbidity					Sec. A		
Turbidity  Microbiological Pa  Coliforms, Total	arameters	< 1	MAC = 0	1	CFU/100 mL	2024-04-23	LIT1
Turbidity  Microbiological Pa  Coliforms, Total  Heterotrophic Pla	arameters	< 1 < 5	MAC = 0 N/A	1 5	CFU/100 mL CFU/mL	2024-04-23 2024-04-23	HT1
Turbidity  Microbiological Pa  Coliforms, Total  Heterotrophic Pla  E. coli	arameters ate Count	< 1 < 5 < 1	MAC = 0 N/A MAC = 0	1 5 1	CFU/100 mL	2024-04-23	HT1
Microbiological Pa Coliforms, Total Heterotrophic Pla E. coli	arameters ate Count	< 1 < 5	MAC = 0 N/A MAC = 0	1 5 1	CFU/100 mL CFU/mL	2024-04-23 2024-04-23	HT1
Turbidity  Microbiological Pa Coliforms, Total Heterotrophic Pla E. coli  WT# 94F0 - S Pe	arameters ate Count ederson (24D2893-06	< 1 < 5 < 1	MAC = 0 N/A MAC = 0	1 5 1	CFU/100 mL CFU/mL	2024-04-23 2024-04-23	HT1
Turbidity  Microbiological Pa Coliforms, Total Heterotrophic Pla E. coli  WT# 94F0 - S Pe Field Parameters Temperature, fiel	arameters ste Count ederson (24D2893-06	< 1 < 5 < 1 )   Matrix: Water   Sam	MAC = 0 N/A MAC = 0 pled: 2024-04-22 1	1 5 1	CFU/100 mL CFU/mL CFU/100 mL	2024-04-23 2024-04-23 2024-04-23	HT1
Turbidity  Microbiological Pa Coliforms, Total Heterotrophic Pla E. coli  WT# 94F0 - S Pe Field Parameters Temperature, fiel	arameters ste Count ederson (24D2893-06	< 1 < 5 < 1 )   Matrix: Water   Sam	MAC = 0 N/A MAC = 0 pled: 2024-04-22 1	1 5 1 4:20	CFU/100 mL CFU/mL CFU/100 mL	2024-04-23 2024-04-23 2024-04-23	HT1
Turbidity  Microbiological Pa Coliforms, Total Heterotrophic Pla E. coli  WT# 94F0 - S Pe Field Parameters Temperature, fiel General Parameter	arameters  ate Count  aderson (24D2893-06	< 1 < 5 < 1 )   Matrix: Water   Sam	MAC = 0 N/A MAC = 0 pled: 2024-04-22 1 AO ≤ 15	1 5 1 4:20	CFU/100 mL CFU/mL CFU/100 mL	2024-04-23 2024-04-23 2024-04-23	HT1
Turbidity  Microbiological Pa Coliforms, Total Heterotrophic Pla E. coli  WT# 94F0 - S Pe Field Parameters Temperature, fiel General Parameter Turbidity  Microbiological Pa	arameters  ate Count  aderson (24D2893-06	< 1 < 5 < 1 )   Matrix: Water   Sam	MAC = 0 N/A MAC = 0 pled: 2024-04-22 1 AO ≤ 15	1 5 1 4:20	CFU/100 mL CFU/mL CFU/100 mL	2024-04-23 2024-04-23 2024-04-23	HT1
Turbidity  Microbiological Pa Coliforms, Total Heterotrophic Pla E. coli  WT# 94F0 - S Pe Field Parameters Temperature, fiel General Parameter Turbidity	arameters ate Count aderson (24D2893-06 aderson	< 1 < 5 < 1 )   Matrix: Water   Sam 7.2	MAC = 0 N/A MAC = 0 pled: 2024-04-22 1 AO ≤ 15	1 5 1 14:20	CFU/100 mL CFU/mL CFU/100 mL °C	2024-04-23 2024-04-23 2024-04-23 2024-04-22 2024-04-25	HT1
Turbidity  Microbiological Pa Coliforms, Total Heterotrophic Pla E. coli  WT# 94F0 - S Pe Field Parameters Temperature, fiel General Parameter Turbidity  Microbiological Pa Coliforms, Total	arameters ate Count aderson (24D2893-06 aderson	< 1 < 5 < 1 )   Matrix: Water   Sam  7.2 < 0.10 < 1	MAC = 0 N/A MAC = 0  pled: 2024-04-22 1  AO ≤ 15  OG < 1  MAC = 0	1 5 1 4:20 0.10	CFU/100 mL CFU/mL CFU/100 mL °C	2024-04-23 2024-04-23 2024-04-23 2024-04-22 2024-04-25	
Turbidity  Microbiological Pa Coliforms, Total Heterotrophic Pla E. coli  WT# 94F0 - S Pe Field Parameters Temperature, fiel General Paramete Turbidity  Microbiological Pa Coliforms, Total Heterotrophic Pla	arameters ate Count aderson (24D2893-06 aderson	< 1 < 5 < 1 )   Matrix: Water   Sam  7.2 < 0.10 < 1 < 5	MAC = 0 N/A MAC = 0  pled: 2024-04-22 1  AO ≤ 15  OG < 1  MAC = 0 N/A	1 5 1 4:20 0.10	CFU/100 mL CFU/mL CFU/100 mL °C NTU CFU/100 mL CFU/100 mL	2024-04-23 2024-04-23 2024-04-22 2024-04-25 2024-04-23 2024-04-23	
Turbidity  Microbiological Pa Coliforms, Total Heterotrophic Pla E. coli  WT# 94F0 - S Pe Field Parameters Temperature, fiel General Parameter Turbidity  Microbiological Pa Coliforms, Total Heterotrophic Pla E. coli	arameters ate Count aderson (24D2893-06 aderson	< 1 < 5 < 1 )   Matrix: Water   Sam  7.2 < 0.10 < 1 < 5	MAC = 0 N/A MAC = 0  pled: 2024-04-22 1  AO ≤ 15  OG < 1  MAC = 0 N/A	1 5 1 4:20 0.10	CFU/100 mL CFU/100 mL  °C  NTU  CFU/100 mL  CFU/100 mL  CFU/100 mL	2024-04-23 2024-04-23 2024-04-22 2024-04-25 2024-04-23 2024-04-23	



REPORTED TO PROJECT	Quesnel, City of Semi Annually Distribution System				WORK ORDER REPORTED	24D2893 2024-04-30 12:58	
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94F0 - S Ped	lerson (24D2893-06)   Ma	trix: Water   Sam	pled: 2024-04-22 1	4:20, Continu	ued		
Total Metals, Contil	nued						
Lead, total		< 0.00020	MAC = 0.005	0.00020	mg/L	2024-04-26	
Manganese, total		0.00570	MAC = 0.12	0.00020	mg/L	2024-04-26	
Zinc, total		< 0.0040	AO ≤ 5	0.0040	mg/L	2024-04-26	
Volatile Organic Co	ompounds (VOC)						
Vinyl chloride		< 1.0	MAC = 2	1.0	μg/L	2024-04-26	
Surrogate: Toluene	e-d8	83		70-130	%	2024-04-26	
WT# 35D91 - New	/ Caron Pit (24D2893-07)	Matrix: Water	Sampled: 2024-04-	22 12:45			
Field Parameters							
Temperature, field		6.1	AO ≤ 15		°C	2024-04-22	
General Parameters	S						
Turbidity		< 0.10	OG < 1	0.10	NTU	2024-04-25	
Microbiological Pai	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-04-23	
Heterotrophic Plat	e Count	9	N/A	5	CFU/mL	2024-04-23	HT1
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-04-23	
Total Metals							
Copper, total		0.00272	MAC = 2	0.00040	mg/L	2024-04-26	
Iron, total		< 0.010	AO ≤ 0.3	0.010		2024-04-26	
Lead, total		0.00023	MAC = 0.005	0.00020	mg/L	2024-04-26	
Manganese, total		0.0103	MAC = 0.12	0.00020		2024-04-26	
Zinc, total		0.0199	AO ≤ 5	0.0040	mg/L	2024-04-26	
Volatile Organic Co	ompounds (VOC)						
Vinyl chloride		< 1.0	MAC = 2	1.0	μg/L	2024-04-26	
Surrogate: Toluene	e-d8	81		70-130	%	2024-04-26	
WT# 179CA - S D	ennis Rd (24D2893-08)	Matrix: Water   S	ampled: 2024-04-22	2 13:55			
Field Parameters							
Temperature, field		7.4	AO ≤ 15		°C	2024-04-22	
General Parameter	s						
Turbidity		< 0.10	OG < 1	0.10	NTU	2024-04-25	
Microbiological Pa	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-04-23	
			700000		Table Total Control of the Control		LITA
Heterotrophic Plat	e Count	< 5	N/A	5	CFU/mL	2024-04-23	HT1



REPORTED TO

Quesnel, City of

**PROJECT** 

Semi Annually Distribution System

WORK ORDER

24D2893

REPORTED

2024-04-30 12:58

Sample Qualifiers:

The sample was prepared and/or analyzed past the recommended holding time.



REPORTED TO Quesnel, City of WORK ORDER 24D2893

PROJECT Semi Annually Distribution System REPORTED 2024-04-30 12:58

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
Heterotrophic Plate Count in Water	SM 9215 D (2022)	Membrane Filtration / Membrane Filtration	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	1	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	1	Kelowna
Volatile Organic Compounds in Water	EPA 5030B / EPA 8260D	Purge&Trap / GC-MSD (SIM)	4	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

#### Glossary of Terms:

RL Reporting Limit (default)

Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres
CFU/mL Colony Forming Units per millilitre

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

NTU Nephelometric Turbidity Units
OG Operational Guideline (treated water)

μg/L Micrograms per litre

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

#### General Comments:

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REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

PO NUMBER

**PROJECT** 

Monthly Reservoirs

**PROJECT INFO** 

WORK ORDER

24A0228

RECEIVED / TEMP

2024-01-03 14:33 / 5.6°C

REPORTED

2024-01-10 09:34

**COC NUMBER** 

No Number

#### Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks



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Ahead of the Curve



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

It's simple. We figure the enjoy working with our engaged team members; the more likely you are to give us continued opportunities to support you.

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Authorized By:

**Brent Whitehead** Account Manager what

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REPORTED TO Quesnel, City of Monthly Reservoirs					WORK ORDER REPORTED	24A0228 2024-01-1	0 09:34
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94EA R-1 Sh	adow Heights (24A0228-0	01)   Matrix: Wat	er   Sampled: 2024	-01-02 09:30	5		
Field Parameters					7		
Temperature, field		7.3	AO ≤ 15		°C	2024-01-02	
Microbiological Pai	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-01-03	НТ3
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-01-03	НТ3
Total Metals							
Manganese, total		0.0531	MAC = 0.12	0.00020	mg/L	2024-01-06	
WT# 94F9 - R-2 P	inecrest (24A0228-02)   M	atrix: Water   Sa	mpled: 2024-01-02	10:00			
Field Parameters							
Temperature, field		8.1	AO ≤ 15		°C	2024-01-02	
Microbiological Pai	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-01-03	НТ3
E. coli		< 1	MAC = 0		CFU/100 mL	2024-01-03	HT3
Total Metals							
Manganese, total		0.320	MAC = 0.12	0.00020	ma/L	2024-01-06	
WT# 94FA R-3 Su Field Parameters	gar Loaf (24A0228-03)   M	latrix: Water   Sa	ampled: <b>2024-01-0</b> 2 AO ≤ 15	2 11:30	°C	2024-01-02	
Microbiological Par	1.875.61.65		1.0 - 3.0			20210102	
Coliforms, Total	ameters	< 1	MAC = 0	4	CFU/100 mL	2024.04.02	
E. coli		< 1	MAC = 0		CFU/100 mL	2024-01-03 2024-01-03	
Total Metals							
Manganese, total		0.0108	MAC = 0.12	0.00020	ma/l	2024-01-06	
Manganese, total		0.0108	WAC - 0.12	0.00020	mg/L	2024-01-06	
WT# 94EB R-4 Ab	bbott Dr 1 (24A0228-04)   N	Matrix: Water   S	ampled: 2024-01-0	2 10:30			
Field Parameters							
Temperature, field		6.7	AO ≤ 15		°C	2024-01-02	
Microbiological Pai	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-01-03	
E. coli		< 1	MAC = 0		CFU/100 mL	2024-01-03	
Total Metals							
Manganese, total		0.00328	MAC = 0.12	0.00020	mg/L	2024-01-06	
			DECOMPOSED SECTION	90/00/00/00/00/00		- Paro Hawada	



REPORTED TO

Quesnel, City of Monthly Reservoirs WORK ORDER

24A0228 2024-01-10 09:34

PROJECT Monthly Reservoir	'S			REPORTED	2024-01-1	0 09:34
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
NT# 94EC R-4 Abbott Dr 2 (24A0228	-05)   Matrix: Water   Sa	ampled: 2024-01-0	2 10:40			
Field Parameters						
Temperature, field	7.1	AO ≤ 15		°C	2024-01-02	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-01-03	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-01-03	
Total Metals						
Manganese, total	0.00281	MAC = 0.12	0.00020	mg/L	2024-01-06	
WT# 94FC R-5 Dragon Hill (24A0228  Field Parameters						
Field Parameters						
Temperature, field	7.3	AO ≤ 15		°C	2024-01-02	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0		CFU/100 mL	2024-01-03	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-01-03	
Total Metals						
Manganese, total	0.0626	MAC = 0.12	0.00020	mg/L	2024-01-06	
WT# 94FF - R-6 New Tatchell Reserv	/ (24A0228-07)   Matrix:	Water   Sampled:	2024-01-02 1	4:00		
Field Parameters						
Temperature, field	7.4	AO ≤ 15		°C	2024-01-02	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-01-03	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-01-03	
Total Metals						

#### Sample Qualifiers:

HT3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.



REPORTED TO PROJECT

Quesnel, City of

Monthly Reservoirs

WORK ORDER

24A0228

REPORTED

2024-01-10 09:34

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

#### Glossary of Terms:

RL < Reporting Limit (default)

. .

Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C AO Degrees Celcius Aesthetic Objective

CFU/100 mL

Colony Forming Units per 100 millilitres

MAC

Maximum Acceptable Concentration (health based)

mg/L

Milligrams per litre

EPA

United States Environmental Protection Agency Test Methods

SM

Standard Methods for the Examination of Water and Wastewater, American Public Health Association

#### General Comments:

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REPORTED TO Quesnel, City of

1350 Sword Ave Quesnel, BC V2J 7H2

ATTENTION

Joe Law

PO NUMBER

PROJECT

Monthly Reservoirs

**PROJECT INFO** 

WORK ORDER

24A3019

RECEIVED / TEMP

2024-01-31 13:38 / 7.0°C

REPORTED

2024-02-05 15:57

COC NUMBER

No Number

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Authorized By:

Brent Whitehead Account Manager M what

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REPORTED TO Quesnel, City of Monthly Reservoirs				WORK ORDER REPORTED	24A3019 2024-02-0	05 15:57
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
WT# 94EA R-1 Shadow Heights (24A3019-	-01)   Matrix: Wat	er   Sampled: 2024	-01-30 09:30			
Field Parameters						
Temperature, field	8.2	AO ≤ 15		°C	2024-01-30	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-01-31	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-01-31	
Total Metals						
Manganese, total	0.178	MAC = 0.12	0.00020	mg/L	2024-02-03	
WT# 94F9 - R-2 Pinecrest (24A3019-02)   N	Matrix: Water   Sa	mpled: 2024-01-30	10:00			
Field Parameters						
Temperature, field	8.1	AO ≤ 15		°C	2024-01-30	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-01-31	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-01-31	
Total Metals						
Manganese, total	0.337	MAC = 0.12	0.00020	mg/L	2024-02-03	
WT# 94FA R-3 Sugar Loaf (24A3019-03)   I	Matrix: Water   Sa	ampled: 2024-01-30	11:30			
Field Parameters						
Temperature, field	7.4	AO ≤ 15		°C	2024-01-30	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-01-31	
E. coli	< 1	MAC = 0	- 1	CFU/100 mL	2024-01-31	
Total Metals						
Manganese, total	0.0150	MAC = 0.12	0.00020	mg/L	2024-02-03	
WT# 94EB R-4 Abbott Dr 1 (24A3019-04)	Matrix: Water   S	ampled: 2024-01-3	0 10:30			
Field Parameters						
Temperature, field	6.1	AO ≤ 15		°C	2024-01-30	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-01-31	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-01-31	
Total Metals						
Manganese, total	0.00678	MAC = 0.12	0.00020	mg/L	2024-02-03	



PROJECT

REPORTED TO Quesnel, City of Monthly Reservoirs WORK ORDER

24A3019

REPORTED

2024-02-05 15:57

PROJECT Monthly Reservoirs				REPORTED	2024-02-0	05 15:57
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
VT# 94EC R-4 Abbott Dr 2 (24A3019-0	5)   Matrix: Water   S	ampled: 2024-01-3	0 10:45			
Field Parameters						
Temperature, field	6.2	AO ≤ 15		°C	2024-01-30	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-01-31	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-01-31	
Fotal Metals						
Manganese, total	0.00603	MAC = 0.12	0.00020	mg/L	2024-02-03	
Temperature, field	7.6	AO ≤ 15		°C	2024-01-30	
NT# 94FC R-5 Dragon Hill (24A3019-0	6)   Matrix: Water   S	ampled: 2024-01-3	0 14:20			
	7.6	AU 5 15		C	2024-01-30	
Microbiological Parameters	724		de	0511400	0004.04.04	
Coliforms, Total  E. coli	< 1	MAC = 0 MAC = 0		CFU/100 mL CFU/100 mL	2024-01-31	
Total Metals						
Manganese, total	0.0314	MAC = 0.12	0.00020	mg/L	2024-02-03	
NT# 94FF - R-6 New Tatchell Reserv (	24A3019-07)   Matriy	· Water I Sampled:	2024-01-30 1	13-15		
Field Parameters	2-7-3010-07)   matrix	. Water   Campied.	2024-01-00	10.10		
Temperature, field	7.2	AO ≤ 15		°C	2024-01-30	
Microbiological Parameters	7.4	7.0 - 10			202.0.00	
Coliforms, Total	< 1	MAC = 0	a a	CFU/100 mL	2024-01-31	
E. coli	< 1	MAC = 0		CFU/100 mL	2024-01-31	
Total Metals				2. 6		
	0.00574	MAC = 0.10	0.00000	a/I	2024 02 02	
Manganese, total	0.00571	MAC = 0.12	0.00020	mg/L	2024-02-	-03



REPORTED TO PROJECT

Quesnel, City of

Monthly Reservoirs

WORK ORDER

24A3019

REPORTED

2024-02-05 15:57

Analysis Description	Method Ref.	Technique	Accredited	<b>Location</b> Kelowna
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
Total Metals in Water	Metals in Water EPA 200.2 / EPA 6020B HNO3+HCI Hot Block Digestion / Indu Coupled Plasma-Mass Spectroscopy		✓	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

#### Glossary of Terms:

RL Reporting Limit (default)

< Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

#### **General Comments:**

The results in this report apply to the received samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Caro will dispose of all samples within 30 days of sample receipt, unless otherwise agreed. The quality control (QC) data is available upon request

Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted **red**. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do <u>not</u> take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager:bwhitehead@caro.ca

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REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

ATTENTION

Joe Law

PO NUMBER

PROJECT **PROJECT INFO**  Monthly Reservoirs

WORK ORDER

24B2906

RECEIVED / TEMP

2024-02-28 14:34 / 3.2°C

REPORTED COC NUMBER 2024-03-06 16:58 No Number

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and Introduction: healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks



We've Got Chemistry



Ahead of the Curve



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

It's simple. We figure the fun our with working enjoy more members; the engaged team give us continued likely you are to opportunities to support you.

regulation research, Through and instrumentation, knowledge, analytical centre for are your technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: https://www.caro.ca/terms-conditions

If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

**Brent Whitehead** Account Manager I what

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7 | 1-888-311-8846 | www.caro.ca



EPORTED TO Quesnel, City of Monthly Reservoirs				WORK ORDER REPORTED	24B2906 2024-03-06 16	:58
ROJECT Monthly Reservoirs	Result	Guideline	RL	Units	Analyzed Qu	ualifier
Analyte	719 77		27 00:30			
VT# 94EA R-1 Shadow Heights (24B2906	6-01)   Matrix: Water	Sampled: 2024-02-	27 09.50			
Field Parameters  Temperature, field	5.4	AO ≤ 15		°C	2024-02-27	
Microbiological Parameters				CFU/100 mL	2024-02-28	
	< 1	MAC = 0		CFU/100 mL	2024-02-28	
Coliforms, Total  E. coli	< 1	MAC = 0		01 01100		
				- Table 1	2024-03-03	
Total Metals	0.0581	MAC = 0.12	0.00020	) mg/L	2024 00 00	
Manganese, total		500 SSS V VV 4444	0.50			
WT# 94F9 - R-2 Pinecrest (24B2906-02)	Matrix: Water   San	npled: 2024-02-27 1	0:50			
Field Parameters				°C	2024-02-27	
Temperature, field	5.7	AO ≤ 15		· ·		
Microbiological Parameters					2024-02-28	
	< 1	MAC = 0		1 CFU/100 mL 1 CFU/100 mL	2024-02-28	
Coliforms, Total E. coli	< 1	MAC = 0		1 CF0/100 III.		
					2024-03-03	
Total Metals	0.342	MAC = 0.12	0.000	20 mg/L	2024-03-03	
Manganese, total						
WT# 94FA R-3 Sugar Loaf (24B2906-0	3)   Matrix: Water   Sa	ampled: 2024-02-27	13:30			
Field Parameters				°C	2024-02-27	
Temperature, field	5.8	AO ≤ 15		U		
				V (4.5545.0	2024-02-28	
Microbiological Parameters	< 1	MAC = 0		1 CFU/100 mL 1 CFU/100 mL	2024-02-28	
Coliforms, Total	< 1	MAC = 0		1 CF0/100 IIIL	202	
E. coli					2024-03-03	
Total Metals	0.0209	MAC = 0.12	0.00	0020 mg/L	2024-03-03	
Manganese, total						
WT# 94EB R-4 Abbott Dr 1 (24B2906	6-04)   Matrix: Water	Sampled: 2024-02-	27 11:00			
Field Parameters				°C	2024-02-27	
Temperature, field	5.1	AO ≤ 15		U	<b>~</b> • • • • • • • • • • • • • • • • • • •	
					2224 02 20	
Microbiological Parameters	< 1	MAC = 0		1 CFU/100 m	00 00	
Coliforms, Total	< 1			1 CFU/100 m	L 2024-02-20	
E. coli					200	
Total Metals	0.0400	MAC = 0.12	0.	00020 mg/L	2024-03-03	7
Manganese, total	0.0122	1411 (0 0 0 1 1 2				Page 2 of
1110119						



EST RES	Quesnel, City of				WORK ORDER REPORTED	24B2906 2024-03-06	3 16:58	
ROJECT	Monthly Reservoirs	D. mile	Guideline	RL	Units	Analyzed	Qualifier	
Analyte		Result		1700				
VT# 94EC R-4 A	Abbott Dr 2 (24B2906-05)   N	Matrix: Water   Sam	pled: 2024-02-27 1	1:10				
ield Parameters					°C	2024-02-27		
Temperature, fie	ld	5.1	AO ≤ 15	7.7				
Microbiological F					1 CFU/100 mL	2024-02-28		
		< 1	MAC = 0		1 CFU/100 mL	2024-02-28		
Coliforms, Total E. coli		< 1	MAC = 0					
Total Metals			0.10	0.0003	20 mg/L	2024-03-03		
	1	0.0124	MAC = 0.12	0.0002				
	Dragon Hill (24B2906-06)			11:45	°C	2024-02-27		
WT# 94FC R-5 Field Parameter Temperature,	Dragon Hill (24B2906-06)   rs field	5.6	AO ≤ 15	11:45	°C 1 CFU/100 mL	2024-02-28	3	
WT# 94FC R-5  Field Parameter  Temperature,	Dragon Hill (24B2906-06)   rs field I Parameters	5.6	AO ≤ 15 MAC = 0	11:45			3	
WT# 94FC R-5 Field Parameter Temperature,	Dragon Hill (24B2906-06)   rs field I Parameters	5.6	AO ≤ 15	11:45	1 CFU/100 mL	2024-02-28	3	
WT# 94FC R-5  Field Parameter Temperature, Microbiologica Coliforms, Total E. coli  Total Metals Manganese,	Toragon Hill (24B2906-06)    rs  field  I Parameters  tal	5.6 < 1 < 1 0.0182	$AO \le 15$ $MAC = 0$ $MAC = 0$ $MAC = 0.12$	0.00	1 CFU/100 mL 1 CFU/100 mL 020 mg/L	2024-02-28	3 8	
WT# 94FC R-5  Field Parameter Temperature, Microbiologica Coliforms, Total E. coli  Total Metals Manganese,	Toragon Hill (24B2906-06)    rs  field  I Parameters  tal	5.6 < 1 < 1 0.0182	$AO \le 15$ $MAC = 0$ $MAC = 0$ $MAC = 0.12$	0.00	1 CFU/100 mL 1 CFU/100 mL 020 mg/L	2024-02-28 2024-02-28	3 8	
WT# 94FC R-5  Field Parameter Temperature, **  Microbiologica Coliforms, Total E. coli  Total Metals Manganese,  WT# 94FF - I	rs field I Parameters tal  total R-6 New Tatchell Reserv (2	5.6 < 1 < 1 0.0182	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0.12  C: Water   Sampled:	0.00	1 CFU/100 mL 1 CFU/100 mL 020 mg/L	2024-02-28 2024-02-28	3 8 3	
WT# 94FC R-5  Field Parameter Temperature, 1  Microbiologica Coliforms, Tot E. coli  Total Metals Manganese, WT# 94FF - I  Field Parame	rs field I Parameters field total  R-6 New Tatchell Reserv (2)	5.6 < 1 < 1 0.0182	$AO \le 15$ $MAC = 0$ $MAC = 0$ $MAC = 0.12$	0.00	1 CFU/100 mL 1 CFU/100 mL 020 mg/L	2024-02-28 2024-02-28 2024-03-0	3 8 3	
WT# 94FC R-5  Field Parameter Temperature, financial Microbiologica Coliforms, Total E. coli  Total Metals Manganese, WT# 94FF - I  Field Parame Temperature	rs field I Parameters tal  total R-6 New Tatchell Reserv (2) ters e, field	5.6 < 1 < 1 0.0182 4B2906-07)   Matrix	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0.12  C: Water   Sampled:	0.00	1 CFU/100 mL 1 CFU/100 mL 020 mg/L -27 14:10	2024-02-28 2024-03-0 2024-02-2	3 8 3 27	
WT# 94FC R-5  Field Parameter Temperature, 1  Microbiologica Coliforms, Tot E. coli  Total Metals Manganese, WT# 94FF - I  Field Parame Temperature Microbiologic	i Dragon Hill (24B2906-06)   rs field Il Parameters ial total R-6 New Tatchell Reserv (2 ters e, field cal Parameters	5.6 < 1 < 1 0.0182 4B2906-07)   Matrix	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0.12  C: Water   Sampled:  AO ≤ 15  MAC = 0	0.00	1 CFU/100 mL 1 CFU/100 mL 020 mg/L -27 14:10 °C	2024-02-28 2024-03-0 2024-02-3	3 8 3 27	
WT# 94FC R-5  Field Parameter Temperature, **  Microbiologica Coliforms, Total E. coli  Total Metals Manganese,  WT# 94FF - I  Field Parame Temperature Microbiologic Coliforms, Total	i Dragon Hill (24B2906-06)   rs field Il Parameters ial total R-6 New Tatchell Reserv (2 ters e, field cal Parameters	5.6 < 1 < 1 0.0182 4B2906-07)   Matrix	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0.12  C: Water   Sampled:  AO ≤ 15	0.00	1 CFU/100 mL 1 CFU/100 mL 020 mg/L -27 14:10	2024-02-28 2024-03-0 2024-02-3	3 8 3 27	
WT# 94FC R-5  Field Parameter Temperature, Microbiologica Coliforms, Tot E. coli  Total Metals Manganese, WT# 94FF - I  Field Parame Temperature Microbiologic	i Dragon Hill (24B2906-06)   rs field Il Parameters ial total R-6 New Tatchell Reserv (2 ters e, field cal Parameters	5.6  < 1 < 1 0.0182  4B2906-07)   Matrix  5.7	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0.12  C: Water   Sampled:  AO ≤ 15  MAC = 0	0.00 2 <b>024-02</b>	1 CFU/100 mL 1 CFU/100 mL 020 mg/L -27 14:10 °C	2024-02-28 2024-03-0 2024-02-3	3 8 3 3 27 -28 -28	



REPORTED TO **PROJECT** 

Quesnel, City of Monthly Reservoirs WORK ORDER

24B2906

2024-03-06 16:58 REPORTED

Analysis Description	Method Ref.	Technique	Accredited	Location
Analysis Description		Silver A Chromogult Agar	V	Kelowna
Coliforms, Total in Water	SM 9222* (2015) SM 9222* (2015) EPA 200.2 / EPA 6020B	Membrane Filtration / Chromocult Agar Membrane Filtration / Chromocult Agar	1	Kelowna
E. coli in Water Total Metals in Water		HNO3+HCI Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Note: An asterisk in the Method	Reference indicates that the CAR	O method has been modified from the reference method		

Glossary of Terms:

Reporting Limit (default) RL

Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

Degrees Celcius °C Aesthetic Objective AO

Colony Forming Units per 100 millilitres CFU/100 mL

Maximum Acceptable Concentration (health based) MAC

Milligrams per litre mg/L

United States Environmental Protection Agency Test Methods **EPA** 

Standard Methods for the Examination of Water and Wastewater, American Public Health Association SM

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REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

PO NUMBER

**PROJECT** 

Monthly Reservoirs

**PROJECT INFO** 

WORK ORDER

24C3161

RECEIVED / TEMP

2024-03-27 14:38 / 6.8°C

REPORTED

2024-04-04 12:15

#### Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

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If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead Account Manager M unshired

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						ret	
REPORTED TO PROJECT	Quesnel, City of Monthly Reservoirs				WORK ORDER REPORTED	24C3161 2024-04-0	4 12:15
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94EA R-1 Sh	adow Heights (24C3161-	01)   Matrix: Wate	er   Sampled: 2024	-03-26 09:15			
Field Parameters							
Temperature, field		8.6	AO ≤ 15		°C	2024-03-26	
Microbiological Par	ameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-03-27	НТ3
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-03-27	HT3
Total Metals							
Manganese, total		0.0852	MAC = 0.12	0.00020	mg/L	2024-04-03	
	necrest (24C3161-02)   M	atrix: Water   Sa	mpled: 2024-03-26	09:45			
Field Parameters			10 - 45		**	0004.00.00	
Temperature, field		8.9	AO ≤ 15		°C	2024-03-26	
Microbiological Par	ameters						
Coliforms, Total		< 1	MAC = 0		CFU/100 mL	2024-03-27	HT3
E. coli		<1	MAC = 0	1	CFU/100 mL	2024-03-27	НТ3
Total Metals							
Manganese, total		0.355	MAC = 0.12	0.00020	mg/L	2024-04-03	
WT# 94FA R-3 Su	gar Loaf (24C3161-03)   N	Matrix: Water   Sa	mpled: 2024-03-26	3 11:10			
Field Parameters							
Temperature, field		8.7	AO ≤ 15		°C	2024-03-26	
Microbiological Par	ameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-03-27	
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-03-27	
Total Metals							
Manganese, total		0.0176	MAC = 0.12	0.00020	mg/L	2024-04-03	
WT# 94EB R-4 Ab	bott Dr 1 (24C3161-04)	Matrix: Water   S	ampled: 2024-03-2	6 10:45			
Field Parameters							
Temperature, field		7.0	AO ≤ 15		°C	2024-03-26	
Microbiological Par	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-03-27	
		< 1	MAC = 0	1	CFU/100 mL	2024-03-27	
E. coli		S 1	MAC - 0	1	01 07 100 IIIE	LOL! OO L!	
E. coli  Total Metals		< 1	IWAC - 0		OF OF TOO THE	2021 00 21	



Sample Qualifiers:

	uesnel, City of lonthly Reservoirs				WORK ORDER REPORTED	24C3161 2024-04-0	4 12:15
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94EC R-4 Abbo	tt Dr 2 (24C3161-05)   N	Matrix: Water   S	ampled: 2024-03-2	6 11:00			
Field Parameters							
Temperature, field		6.9	AO ≤ 15		°C	2024-03-26	
Microbiological Param	eters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-03-27	
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-03-27	
Total Metals							
Manganese, total		0.00901	MAC = 0.12	0.00020	mg/L	2024-04-03	
		7.9	AO ≤ 15		°C	2024-03-26	
Field Parameters							
Temperature, field		7.9	AO ≤ 15		°C	2024-03-26	
Microbiological Param	neters						
Coliforms, Total		< 1	MAC = 0		CFU/100 mL	2024-03-27	
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-03-27	
Total Metals							
Manganese, total		0.0314	MAC = 0.12	0.00020	mg/L	2024-04-03	
WT# 94FF - R-6 New	/ Tatchell Reserv (24C3	3161-07)   Matrix	: Water   Sampled:	2024-03-26	13:20		
Field Parameters							
Temperature, field		7.6	AO ≤ 15		°C	2024-03-26	
Microbiological Paran	neters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-03-27	
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-03-27	
Total Metals							
, otal motalo							

Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.



REPORTED TO

Quesnel, City of

**PROJECT** 

Monthly Reservoirs

WORK ORDER

24C3161

REPORTED

2024-04-04 12:15

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	<b>✓</b>	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

#### Glossary of Terms:

RL Reporting Limit (default)

Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

#### **General Comments:**

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REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

ATTENTION

Joe Law

WORK ORDER

24E1053

PO NUMBER

PROJECT

**PROJECT INFO** 

Monthly Reservoirs

RECEIVED / TEMP REPORTED 2024-05-08 15:57 / 11.3°C

REPORTED

2024-05-15 14:46

COC NUMBER

No Number

### Introduction:

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Big Picture Sidekicks



We've Got Chemistry



Ahead of the Curve



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

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If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead Account Manager M wished

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	Quesnel, City of Monthly Reservoirs				WORK ORDER REPORTED	24E1053 2024-05-1	5 14:46
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifier
WT# 94EA R-1 Sh	nadow Heights (24E1053-0	01)   Matrix: Wate	er   Sampled: 2024	-05-07 09:30			
Field Parameters							
Temperature, field	·	11.6	AO ≤ 15		°C	2024-05-07	
Microbiological Pa	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-05-08	НТ3
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-05-08	НТ3
Total Metals							
Manganese, total	<u> </u>	0.0609	MAC = 0.12	0.00020	mg/L	2024-05-12	
WT# 94F9 - R-2 P	Pinecrest (24E1053-02)   M	atrix: Water   Sa	mpled: 2024-05-07	10:00			
Field Parameters							
Temperature, field	l <u> </u>	8.8	AO ≤ 15		°C	2024-05-07	
Microbiological Pa	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-05-08	НТ3
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-05-08	HT3
Total Metals							
Manganese, total		0.355	MAC = 0.12	0.00020	mg/L	2024-05-12	
	ıgar Loaf (24E1053-03)   M				mg/L	2024-05-12	
WT# 94FA R-3 Su					mg/L °C	2024-05-12	
WT# 94FA R-3 Su Field Parameters Temperature, field		latrix: Water   Sa	mpled: 2024-05-07				
WT# 94FA R-3 Su Field Parameters Temperature, field		latrix: Water   Sa	mpled: 2024-05-07	11:20			
WT# 94FA R-3 Su  Field Parameters  Temperature, field  Microbiological Pa		latrix: <mark>W</mark> ater   Sa	mpled: <b>2024-05-07</b> AO ≤ 15	<b>' 11:20</b>	°C	2024-05-07	
WT# 94FA R-3 Su  Field Parameters  Temperature, field  Microbiological Pa  Coliforms, Total		9.8 < 1	AO ≤ 15 MAC = 0	<b>' 11:20</b>	°C CFU/100 mL	2024-05-07	
WT# 94FA R-3 Su Field Parameters Temperature, field Microbiological Pa Coliforms, Total E. coli	rameters	9.8 < 1	AO ≤ 15 MAC = 0	<b>' 11:20</b>	°C CFU/100 mL CFU/100 mL	2024-05-07	
WT# 94FA R-3 Su  Field Parameters  Temperature, field  Microbiological Pa  Coliforms, Total  E. coli  Total Metals  Manganese, total	rameters	9.8  < 1 < 1 0.0115	MAC = 0 MAC = 0 MAC = 0	1 1 1 1 0.00020	°C CFU/100 mL CFU/100 mL	2024-05-07 2024-05-08 2024-05-08	
WT# 94FA R-3 Su  Field Parameters  Temperature, field  Microbiological Pa  Coliforms, Total  E. coli  Total Metals  Manganese, total	rameters	9.8  < 1 < 1 0.0115	MAC = 0 MAC = 0 MAC = 0	1 1 1 1 0.00020	°C CFU/100 mL CFU/100 mL	2024-05-07 2024-05-08 2024-05-08	
WT# 94FA R-3 Su  Field Parameters  Temperature, field  Microbiological Pa  Coliforms, Total  E. coli  Total Metals  Manganese, total  WT# 94EB R-4 All	rameters bbott Dr 1 (24E1053-04)   N	9.8  < 1 < 1 0.0115	MAC = 0 MAC = 0 MAC = 0	1 1 1 1 0.00020	°C CFU/100 mL CFU/100 mL	2024-05-07 2024-05-08 2024-05-08	
WT# 94FA R-3 Su  Field Parameters  Temperature, field  Microbiological Pa  Coliforms, Total  E. coli  Total Metals  Manganese, total  WT# 94EB R-4 Al  Field Parameters	rameters bbott Dr 1 (24E1053-04)   N	9.8  < 1 < 1 0.0115  Matrix: Water   Sa	MAC = 0 MAC = 0 MAC = 0 MAC = 0.12	1 1 1 1 0.00020	°C  CFU/100 mL  CFU/100 mL  mg/L	2024-05-07 2024-05-08 2024-05-08 2024-05-12	
WT# 94FA R-3 Su  Field Parameters  Temperature, field  Microbiological Pa  Coliforms, Total  E. coli  Total Metals  Manganese, total  WT# 94EB R-4 Al  Field Parameters  Temperature, field	rameters bbott Dr 1 (24E1053-04)   N	9.8  < 1 < 1 0.0115  Matrix: Water   Sa	MAC = 0 MAC = 0 MAC = 0 MAC = 0.12	1 1 1 1 0.00020 7 10:45	°C  CFU/100 mL  CFU/100 mL  mg/L	2024-05-07 2024-05-08 2024-05-08 2024-05-12	
WT# 94FA R-3 Su  Field Parameters  Temperature, field  Microbiological Pa  Coliforms, Total  E. coli  Total Metals  Manganese, total  WT# 94EB R-4 Al  Field Parameters  Temperature, field  Microbiological Pa	rameters bbott Dr 1 (24E1053-04)   N	9.8  < 1 < 1 0.0115  Matrix: Water   Salatrix: Water   Salatrix: Water   Salatrix	MAC = 0 MAC = 0 MAC = 0 MAC = 0.12 MAC = 0.12	1 1 1 1 0.00020 7 10:45	°C  CFU/100 mL  CFU/100 mL  mg/L	2024-05-07 2024-05-08 2024-05-08 2024-05-12	
WT# 94FA R-3 Su  Field Parameters  Temperature, field  Microbiological Pa  Coliforms, Total  E. coli  Total Metals  Manganese, total  WT# 94EB R-4 Al  Field Parameters  Temperature, field  Microbiological Pa  Coliforms, Total	rameters bbott Dr 1 (24E1053-04)   N	9.8  < 1 < 1 0.0115  Matrix: Water   Salatrix: Water   Salatrix: \( \)	MAC = 0 MAC = 0 MAC = 0 MAC = 0.12 MAC = 0.12 MAC = 0.15 MAC = 0	1 1 1 1 0.00020 7 10:45	°C  CFU/100 mL  CFU/100 mL  mg/L  °C  CFU/100 mL	2024-05-07 2024-05-08 2024-05-12 2024-05-07 2024-05-08	



REPORTED TO

Quesnel, City of Monthly Reservoirs WORK ORDER

24E1053

REPORTED

2024-05-15 14:46

PROJECT Monthly Reservoir	rs .			REPORTED	2024-05-1	5 14:46
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
WT# 94EC R-4 Abbott Dr 2 (24E1053	-05)   Matrix: Water   Sa	ampled: 2024-05-07	7 11:00			
Field Parameters						
Temperature, field	10.2	AO ≤ 15		°C	2024-05-07	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-05-08	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-05-08	
Total Metals						
Manganese, total	0.00446	MAC = 0.12	0.00020	mg/L	2024-05-12	
Field Parameters  Temperature, field	11.0	AO ≤ 15		°C	2024-05-07	
Field Parameters						
Temperature, field	11.0	AO ≤ 15		°C	2024-05-07	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0		CFU/100 mL	2024-05-08	
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-05-08	
Total Metals						
Manganese, total	0.0695	MAC = 0.12	0.00020	mg/L	2024-05-12	
WT# 94FF - R-6 New Tatchell Reserv	v (24E1053-07)   Matrix:	Water   Sampled:	2024-05-07 1	4:00		
Field Parameters						
Temperature, field	9.6	AO ≤ 15		°C	2024-05-07	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-05-08	
		MAC = 0	1	CFU/100 mL	2024-05-08	
E. coli	< 1	IVIAC - 0				
Total Metals	<1	MAC - 0				

### Sample Qualifiers:

HT3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.





REPORTED TO

**PROJECT** 

Quesnel, City of

Monthly Reservoirs

WORK ORDER

24E1053

REPORTED

2024-05-15 14:46

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	1	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

#### Glossary of Terms:

RL Reporting Limit (default)

Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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REPORTED TO PROJECT

Quesnel, City of Monthly Reservoirs WORK ORDER

24E2809

REPORTED

2024-05-29 09:46

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	<b>✓</b>	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	1	Richmond

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НТ3

REPORTED TO PROJECT	Quesnel, City of Monthly Reservoirs				WORK ORDER REPORTED	24E2809 2024-05-2	9 09:46
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94EC R-4 At	obott Dr 2 (24E2809-05)   M	atrix: Water   Sa	ampled: 2024-05-2	1 10:30			
Field Parameters							
Temperature, field		9.8	AO ≤ 15		°C	2024-05-21	
Microbiological Par	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-05-22	
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-05-22	
Total Metals							
Manganese, total		0.00144	MAC = 0.12	0.00020	ma/L	2024-05-28	
Field Parameters							
Field Parameters		0.0	AO < 15		°C	2024 OF 21	
Temperature, field	1. 3. A.Y.	9.8	AO ≤ 15		°C	2024-05-21	
Temperature, field	1. 3. A.Y.	27		1			
Temperature, field	1. 3. A.Y.	9.8	AO ≤ 15  MAC = 0  MAC = 0		°C  CFU/100 mL  CFU/100 mL	2024-05-21 2024-05-22 2024-05-22	
Temperature, field  Microbiological Pail  Coliforms, Total  E. coli	1. 3. A.Y.	< 1	MAC = 0		CFU/100 mL	2024-05-22	
Temperature, field  Microbiological Pai  Coliforms, Total  E. coli  Total Metals	1. 3. A.Y.	< 1	MAC = 0	1	CFU/100 mL CFU/100 mL	2024-05-22	
Temperature, field  Microbiological Pail  Coliforms, Total  E. coli  Total Metals  Manganese, total	1. 3. A.Y.	< 1 < 1 0.0763	MAC = 0 MAC = 0 MAC = 0.12	0.00020	CFU/100 mL CFU/100 mL mg/L	2024-05-22 2024-05-22	
Temperature, field  Microbiological Pail  Coliforms, Total  E. coli  Total Metals  Manganese, total  WT# 94FF - R-6 N	rameters	< 1 < 1 0.0763	MAC = 0 MAC = 0 MAC = 0.12	0.00020	CFU/100 mL CFU/100 mL mg/L	2024-05-22 2024-05-22	
Temperature, field  Microbiological Pail  Coliforms, Total  E. coli  Total Metals  Manganese, total  WT# 94FF - R-6 N	rameters lew Tatchell Reserv (24E2)	< 1 < 1 0.0763	MAC = 0 MAC = 0 MAC = 0.12	0.00020	CFU/100 mL CFU/100 mL mg/L	2024-05-22 2024-05-22	
Temperature, field  Microbiological Pai  Coliforms, Total  E. coli  Total Metals  Manganese, total  WT# 94FF - R-6 N  Field Parameters  Temperature, field	rameters lew Tatchell Reserv (24E2)	< 1 < 1 0.0763 309-07)   Matrix:	MAC = 0 MAC = 0  MAC = 0.12  Water   Sampled:	0.00020	CFU/100 mL CFU/100 mL mg/L 3:28	2024-05-22 2024-05-22 2024-05-28	
Temperature, field  Microbiological Pai  Coliforms, Total  E. coli  Total Metals  Manganese, total  WT# 94FF - R-6 N  Field Parameters  Temperature, field	rameters lew Tatchell Reserv (24E2)	< 1 < 1 0.0763 309-07)   Matrix:	MAC = 0 MAC = 0  MAC = 0.12  Water   Sampled:	0.00020 <b>2024-05-21 1</b>	CFU/100 mL CFU/100 mL mg/L 3:28	2024-05-22 2024-05-22 2024-05-28	
Temperature, field  Microbiological Pail Coliforms, Total E. coli  Total Metals  Manganese, total  WT# 94FF - R-6 N  Field Parameters  Temperature, field  Microbiological Pail	rameters lew Tatchell Reserv (24E2)	<1 <1 0.0763 309-07)   Matrix:	MAC = 0 MAC = 0 MAC = 0.12 <b>Water   Sampled:</b> AO ≤ 15	0.00020 <b>2024-05-21 1</b>	CFU/100 mL CFU/100 mL mg/L 3:28	2024-05-22 2024-05-22 2024-05-28 2024-05-21	
Temperature, field  Microbiological Pail Coliforms, Total E. coli  Total Metals  Manganese, total  WT# 94FF - R-6 N  Field Parameters  Temperature, field  Microbiological Pail Coliforms, Total	rameters lew Tatchell Reserv (24E2)	<1 <1 0.0763 309-07)   Matrix:	MAC = 0  MAC = 0.12  Water   Sampled:  AO ≤ 15  MAC = 0	0.00020 <b>2024-05-21 1</b>	CFU/100 mL CFU/100 mL mg/L 3:28 °C CFU/100 mL	2024-05-22 2024-05-22 2024-05-28 2024-05-21 2024-05-22	

Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.





REPORTED TO PROJECT	Quesnel, City of Monthly Reservoirs				WORK ORDER REPORTED	24E2809 2024-05-2	9 09:46
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94EA R-1 Sh	nadow Heights (24E2809-0	01)   Matrix: Wate	er   Sampled: 2024-	05-21 09:10			
Field Parameters							
Temperature, field	1	10.1	AO ≤ 15		°C	2024-05-21	
Microbiological Pa	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-05-22	НТ3
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-05-22	HT3
Total Metals							
Manganese, total		0.0656	MAC = 0.12	0.00020	mg/L	2024-05-28	
Field Parameters	Pinecrest (24E2809-02)   M	atrix: water   Sai	mpled: 2024-05-21	09:45			
Temperature, field	i	10.3	AO ≤ 15		°C	2024-05-21	
Microbiological Pa	arameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-05-22	НТ3
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-05-22	НТ3
Total Metals							
Manganese, total		0.348	MAC = 0.12	0.00020	mg/L	2024-05-28	
	ugar Loaf (24E2809-03)   N	latrix: Water   Sa	mpled: 2024-05-21	11:38			
Field Parameters			10.15		20	0004.05.04	
Temperature, field	d	9.9	AO ≤ 15		°C	2024-05-21	
Microbiological Pa	arameters						
Coliforms, Total		< 1	MAC = 0		CFU/100 mL	2024-05-22	
E. coli		<1	MAC = 0	1	CFU/100 mL	2024-05-22	
Total Metals							
Manganese, total		0.00328	MAC = 0.12	0.00020	mg/L	2024-05-28	
WT# 94EB R-4 A	bbott Dr 1 (24E2809-04)   I	Matrix: Water   S	ampled: 2024-05-2	1 10:20			
Field Parameters							
Temperature, fiel	d	10.1	AO ≤ 15		°C	2024-05-21	
Microbiological Pa	arameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-05-22	
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-05-22	
Total Metals							





REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

WORK ORDER

24E2809

PO NUMBER

000 ----

RECEIVED / TEMP

2024-05-22 14:40 / 10.8°C

PROJECT INFO

Monthly Reservoirs

REPORTED

2024-05-29 09:46

**COC NUMBER** 

No Number

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Big Picture Sidekicks



We've Got Chemistry



Ahead of the Curve



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

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Authorized By:

Brent Whitehead Account Manager M what

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REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

Monthly Reservoirs

**ATTENTION** 

Joe Law

WORK ORDER

24F2552

PO NUMBER

PROJECT PROJECT INFO RECEIVED / TEMP

2024-06-20 08:27 / 18.2°C

REPORTED

2024-06-27 10:17

COC NUMBER

No Number

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PROJECT Monthly Reservoirs	3			WORK ORDER REPORTED	24F2552 2024-06-2	7 10:17
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94EA R-1 Shadow Heights (24F2	2552-01)   Matrix: Wate	er   Sampled: 2024-	-06-18 09:10	1		
Field Parameters						
Temperature, field	10.5	AO ≤ 15		°C	2024-06-18	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-06-20	НТЗ
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-06-20	НТ3
Total Metals						
Manganese, total	0.188	MAC = 0.12	0.00020	mg/L	2024-06-26	
WT# 94F9 R-2 Pinecrest (24F2552-02			9:50			
Temperature, field	9.1	AO ≤ 15		°C	2024-06-18	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-06-20	нтз
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-06-20	HT3
Total Metals						
Total Metals  Manganese, total	0.433	MAC = 0.12	0.00020	mg/L	2024-06-25	
Manganese, total  WT# 94FA R-3 Sugar Loaf (24F2552-0	A DESCRIPTION OF THE PROPERTY		A - 12.0	mg/L	2024-06-25	
Manganese, total  WT# 94FA R-3 Sugar Loaf (24F2552-0	A DESCRIPTION OF THE PROPERTY		A - 12.0	mg/L °C	2024-06-25	
Manganese, total  WT# 94FA R-3 Sugar Loaf (24F2552-0  Field Parameters  Temperature, field	03)   Matrix: Water   Sa	impled: 2024-06-18	A - 12.0			
Manganese, total  WT# 94FA R-3 Sugar Loaf (24F2552-0  Field Parameters  Temperature, field	03)   Matrix: Water   Sa	impled: 2024-06-18	11:30			НТЗ
Manganese, total  WT# 94FA R-3 Sugar Loaf (24F2552-0  Field Parameters  Temperature, field  Microbiological Parameters	03)   Matrix: Water   Sa	ampled: <b>2024-06-18</b> AO ≤ 15	11:30	°C	2024-06-18	HT3 HT3
WT# 94FA R-3 Sugar Loaf (24F2552-0 Field Parameters Temperature, field Microbiological Parameters Coliforms, Total	03)   Matrix: Water   Sa 10.2 < 1	AO ≤ 15 MAC = 0	11:30	°C CFU/100 mL	2024-06-18	
Manganese, total  WT# 94FA R-3 Sugar Loaf (24F2552-0)  Field Parameters  Temperature, field  Microbiological Parameters  Coliforms, Total  E. coli	03)   Matrix: Water   Sa 10.2 < 1	AO ≤ 15 MAC = 0	11:30	°C CFU/100 mL CFU/100 mL	2024-06-18	
Manganese, total  WT# 94FA R-3 Sugar Loaf (24F2552-0)  Field Parameters  Temperature, field  Microbiological Parameters  Coliforms, Total  E. coli  Total Metals  Manganese, total	10.2 < 1 < 1 0.00343	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0	11:30 1 1 0.00020	°C CFU/100 mL CFU/100 mL	2024-06-18 2024-06-20 2024-06-20	
Manganese, total  WT# 94FA R-3 Sugar Loaf (24F2552-0)  Field Parameters  Temperature, field  Microbiological Parameters  Coliforms, Total  E. coli  Total Metals  Manganese, total  WT# 94EB R-4 Abbott Dr 1 (24F2552-0)	10.2 < 1 < 1 0.00343	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0	11:30 1 1 0.00020	°C CFU/100 mL CFU/100 mL	2024-06-18 2024-06-20 2024-06-20	
Manganese, total  WT# 94FA R-3 Sugar Loaf (24F2552-0)  Field Parameters  Temperature, field  Microbiological Parameters  Coliforms, Total  E. coli  Total Metals  Manganese, total  WT# 94EB R-4 Abbott Dr 1 (24F2552-0)	10.2 < 1 < 1 0.00343	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0	11:30 1 1 0.00020	°C CFU/100 mL CFU/100 mL	2024-06-18 2024-06-20 2024-06-20	
Manganese, total  WT# 94FA R-3 Sugar Loaf (24F2552-0  Field Parameters  Temperature, field  Microbiological Parameters  Coliforms, Total  E. coli  Total Metals  Manganese, total  WT# 94EB R-4 Abbott Dr 1 (24F2552-	03)   Matrix: Water   Sa 10.2 < 1 < 1 0.00343 -04)   Matrix: Water   Sa	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0  MAC = 0.12	11:30 1 1 0.00020	°C  CFU/100 mL  CFU/100 mL  mg/L	2024-06-18 2024-06-20 2024-06-20 2024-06-24	
Manganese, total  WT# 94FA R-3 Sugar Loaf (24F2552-0)  Field Parameters  Temperature, field  Microbiological Parameters  Coliforms, Total  E. coli  Total Metals  Manganese, total  WT# 94EB R-4 Abbott Dr 1 (24F2552-6)  Field Parameters  Temperature, field	03)   Matrix: Water   Sa 10.2 < 1 < 1 0.00343 -04)   Matrix: Water   Sa	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0  MAC = 0.12	11:30 1 1 0.00020 8 10:30	°C  CFU/100 mL  CFU/100 mL  mg/L	2024-06-18 2024-06-20 2024-06-20 2024-06-24	
Manganese, total  WT# 94FA R-3 Sugar Loaf (24F2552-0)  Field Parameters  Temperature, field  Microbiological Parameters  Coliforms, Total  E. coli  Total Metals  Manganese, total  WT# 94EB R-4 Abbott Dr 1 (24F2552-Field Parameters  Temperature, field  Microbiological Parameters	03)   Matrix: Water   Sa 10.2 < 1 < 1 0.00343 -04)   Matrix: Water   Sa	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0  AO ≤ 15	11:30 1 1 0.00020 8 10:30	°C  CFU/100 mL  CFU/100 mL  mg/L	2024-06-18 2024-06-20 2024-06-20 2024-06-24 2024-06-18	НТ3
Manganese, total  WT# 94FA R-3 Sugar Loaf (24F2552-0)  Field Parameters  Temperature, field  Microbiological Parameters  Coliforms, Total  E. coli  Total Metals  Manganese, total  WT# 94EB R-4 Abbott Dr 1 (24F2552-  Field Parameters  Temperature, field  Microbiological Parameters  Coliforms, Total	03)   Matrix: Water   Sa 10.2 < 1 < 1 0.00343 -04)   Matrix: Water   Sa 11.0	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0.12  AO ≤ 15  MAC = 0.12	11:30 1 1 0.00020 8 10:30	°C  CFU/100 mL  CFU/100 mL  mg/L  °C  CFU/100 mL	2024-06-18 2024-06-20 2024-06-20 2024-06-24 2024-06-18 2024-06-20	НТ3



Sample Qualifiers:

HT3

REPORTED TO PROJECT

Quesnel, City of Monthly Reservoirs WORK ORDER

24F2552

REPORTED

2024-06-27 10:17

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
NT# 94EC R-4 Abbott Dr 2 (24F2552	:-05)   Matrix: Water   Sa	ampled: 2024-06-18	3 10:45			
Field Parameters						
Temperature, field	11.0	AO ≤ 15		°C	2024-06-18	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-06-20	HT3
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-06-20	HT3
Total Metals						
Manganese, total	0.00368	MAC = 0.12	0.00020	mg/L	2024-06-26	
NT# 94FF R-6 New Tatchell Reserv	2,23,22				2024-06-26	
NT# 94FF R-6 New Tatchell Reserv Field Parameters Temperature, field	(24F2552-06)   Matrix: V	Vater   Sampled: 2		:30		
NT# 94FF R-6 New Tatchell Reserv Field Parameters Temperature, field	(24F2552-06)   Matrix: V	Vater   Sampled: 2	024-06-18 13	:30		нтз
NT# 94FF R-6 New Tatchell Reserv Field Parameters Temperature, field Microbiological Parameters	(24F2552-06)   Matrix: V	<b>Vater   Sampled: 2</b> 0 AO ≤ 15	<b>024-06-18 13</b> 1	:30 °C	2024-06-18	HT3 HT3
NT# 94FF R-6 New Tatchell Reserv  Field Parameters  Temperature, field  Microbiological Parameters  Coliforms, Total	(24F2552-06)   Matrix: V 10.6 < 1	<b>Vater   Sampled: 2</b> 0  AO ≤ 15  MAC = 0	<b>024-06-18 13</b> 1	°C  CFU/100 mL	2024-06-18	

Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.



REPORTED TO PROJECT

Quesnel, City of

Monthly Reservoirs

WORK ORDER

24F2552

REPORTED

2024-06-27 10:17

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	4	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

#### Glossary of Terms:

RL Reporting Limit (default)

Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

#### General Comments:

The results in this report apply to the received samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Caro will dispose of all samples within 30 days of sample receipt, unless otherwise agreed. The quality control (QC) data is available upon request

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REPORTED TO PROJECT

Quesnel, City of Monthly Reservoirs WORK ORDER

24G2169

REPORTED

2024-07-23 09:23

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	<b>√</b>	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCI Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

#### Glossary of Terms:

RL Reporting Limit (default)

Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

#### **General Comments:**

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Quesnel, City of



24G2169

2024-07-19

**WORK ORDER** 

## **TEST RESULTS**

REPORTED TO

PROJECT Monthly Reservoir	rs			REPORTED	2024-07-2	23 09:23
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
WT# 94EC R-4 Abbott Dr 2 (24G2169	0-05)   Matrix: Water   S	ampled: 2024-07-1	6 09:48			
Field Parameters						
Temperature, field	12.4	AO ≤ 15		°C	2024-07-16	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-07-17	НТ3
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-07-17	НТ3
Total Metals						
Manganese, total	0.00284	MAC = 0.12	0.00020	mg/L	2024-07-19	
WT# 94FC R-5 Dragon Hill (24G2169 Field Parameters	-06)   Matrix: Water   S	ampled: 2024-07-10	6 11:40			
Temperature, field	12.1	AO ≤ 15		°C	2024-07-16	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-07-17	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-07-17	

#### WT# 94FF R-6 New Tatchell Reserv (24G2169-07) | Matrix: Water | Sampled: 2024-07-16 13:20

0.0324

Field Parameters				
Temperature, field	10.4	AO ≤ 15	°C	2024-07-16
Microbiological Parameters				
Coliforms, Total	< 1	MAC = 0	1 CFU/100 mL	2024-07-17
E. coli	< 1	MAC = 0	1 CFU/100 mL	2024-07-17
Total Metals				
Manganese, total	0.0141	MAC = 0.12	0.00020 mg/L	2024-07-19

MAC = 0.12

0.00020 mg/L

#### Sample Qualifiers:

**Total Metals** 

Manganese, total

НТ3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.



Manganese, total

REPORTED TO PROJECT	Quesnel, City of Monthly Reservoirs				WORK ORDER REPORTED	24G2169 2024-07-2	23 09:23
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94EA R-1 SI	nadow Heights (24G2169-	01)   Matrix: Wate	er   Sampled: 2024	-07-16 14:10			
Field Parameters							
Temperature, field		10.5	AO ≤ 15		°C	2024-07-16	
Microbiological Pa	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-07-17	
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-07-17	
Total Metals							
Manganese, total		0.328	MAC = 0.12	0.00020	mg/L	2024-07-19	
Field Parameters	necrest (24G2169-02)   Ma		1000				
Temperature, field	1	12.9	AO ≤ 15		°C	2024-07-16	
Microbiological Pa	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-07-17	НТ3
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-07-17	HT3
Total Metals							
Manganese, total		0.399	MAC = 0.12	0.00020	mg/L	2024-07-19	
Field Parameters	ugar Loaf (24G2169-03)   N	Matrix: Water   Sa	ampled: <b>2024-07-16</b> AO ≤ 15	3 11:00	°C	2024-07-16	
Temperature, field		12.1	AO ≥ 13			2024-07-10	
Microbiological Pa	arameters		1112		12.7.124.52	442,6242	
Coliforms, Total		< 1	MAC = 0 MAC = 0		CFU/100 mL CFU/100 mL	2024-07-17	=
E. coli		~1	IVIAC - U		OF O/ 100 HIL	2024-01-11	
Total Metals		or washing	1001	_action to	3.7.	5210-124	
Manganese, total		0.00848	MAC = 0.12	0.00020	mg/L	2024-07-19	
WT# 94EB R-4 A	bbott Dr 1 (24G2169-04)	Matrix: Water   S	Sampled: 2024-07-1	6 09:40			
Field Parameters		al en e				0004.07.45	
Temperature, field	d	12.5	AO ≤ 15		°C	2024-07-16	
Microbiological Pa	arameters						
Coliforms, Total		< 1	MAC = 0		CFU/100 mL	2024-07-17	НТ3
E. coli		<1	MAC = 0	1	CFU/100 mL	2024-07-17	HT3
Total Metals							
			1110 010		N. W.	0004.07.40	

2024-07-19

MAC = 0.12

0.00020 mg/L

0.00287





REPORTED TO Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

ATTENTION Joe Law

PO NUMBER

PROJECT Monthly Reservoirs

**PROJECT INFO** 

WORK ORDER 24

24G2169

RECEIVED / TEMP

REPORTED

2024-07-17 13:55 / 21.9°C

2024-07-23 09:23

COC NUMBER No Number

#### Introduction:

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Big Picture Sidekicks



We've Got Chemistry



Ahead of the Curve



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If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead Account Manager M unshirt

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REPORTED TO Quesni

Quesnel, City of 1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

PO NUMBER

PROJECT

Monthly Reservoirs

PROJECT INFO

WORK ORDER

COC NUMBER

24H1749

RECEIVED / TEMP REPORTED 2024-08-14 13:39 / 16.1°C

2024-08-21 10:54

No Number

#### Introduction:

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Authorized By:

Brent Whitehead Account Manager M what

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PROJECT	Quesnel, City of Monthly Reservoirs				WORK ORDER REPORTED	24H1749 2024-08-2	1 10:54
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94EA R-1 Sh	nadow Heights (24H1749-	01)   Matrix: Wate	er   Sampled: 2024	-08-13 10:40	7		
Field Parameters							
Temperature, field		10.9	AO ≤ 15		°C	2024-08-13	
Microbiological Pa	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-08-14	
E. coli		< 1	MAC = 0		CFU/100 mL	2024-08-14	
Total Metals							
Manganese, total		0.147	MAC = 0.12	0.00020	mg/L	2024-08-18	
WT# 94F9 R-2 Pir	necrest (24H1749-02)   Ma	trix: Water   Sam	pled: 2024-08-13 1	11:30			
Field Parameters							
Temperature, field		8.9	AO ≤ 15		°C	2024-08-13	
Microbiological Pa	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-08-14	
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-08-14	
Total Metals							
Manganese, total		0.425	MAC = 0.12	0.00020	mg/L	2024-08-18	
MT# 0/EA D 2 Su	ıgar Loaf (24H1749-03)   N	latrix: Water   Sa	mpled: 2024-08-13	09:55			
Field Parameters			AO ≤ 15		°C	2024-08-13	
Field Parameters Temperature, field		12.4	Access and the second		°C	2024-08-13	
Field Parameters Temperature, field Microbiological Pa		12.4	AO ≤ 15				
Field Parameters Temperature, field			Access and the second	1	°C  CFU/100 mL  CFU/100 mL	2024-08-14	
Field Parameters Temperature, field Microbiological Parameters Coliforms, Total E. coli		12.4	AO ≤ 15 MAC = 0	1	CFU/100 mL		
Field Parameters Temperature, field Microbiological Pa Coliforms, Total E. coli Total Metals		12.4 < 1 < 1	AO ≤ 15  MAC = 0  MAC = 0	1 1	CFU/100 mL CFU/100 mL	2024-08-14 2024-08-14	
Field Parameters Temperature, field Microbiological Parameters Coliforms, Total E. coli		12.4	AO ≤ 15 MAC = 0	1	CFU/100 mL CFU/100 mL	2024-08-14	
Field Parameters Temperature, field Microbiological Parameters Coliforms, Total E. coli Total Metals Manganese, total		12.4 < 1 < 1 0.00566	$AO \le 15$ $MAC = 0$ $MAC = 0$ $MAC = 0.12$	0.00020	CFU/100 mL CFU/100 mL	2024-08-14 2024-08-14	
Field Parameters Temperature, field Microbiological Parameters Coliforms, Total E. coli Total Metals Manganese, total WT# 94EB R-4 Ak	rameters	12.4 < 1 < 1 0.00566	$AO \le 15$ $MAC = 0$ $MAC = 0$ $MAC = 0.12$	0.00020	CFU/100 mL CFU/100 mL mg/L	2024-08-14 2024-08-14	
Field Parameters Temperature, field Microbiological Parameters Coliforms, Total E. coli Total Metals Manganese, total WT# 94EB R-4 Ak	rameters pbott Dr 1 (24H1749-04)   I	12.4 < 1 < 1 0.00566	$AO \le 15$ $MAC = 0$ $MAC = 0$ $MAC = 0.12$	0.00020	CFU/100 mL CFU/100 mL	2024-08-14 2024-08-14	
Field Parameters Temperature, field Microbiological Pa Coliforms, Total E. coli Total Metals Manganese, total WT# 94EB R-4 At	rameters Dbott Dr 1 (24H1749-04)   I	12.4 < 1 < 1 0.00566 Matrix: Water   S	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0.12  ampled: 2024-08-1	0.00020	CFU/100 mL CFU/100 mL mg/L	2024-08-14 2024-08-14 2024-08-18	
Field Parameters Temperature, field Microbiological Parameters Coliforms, Total E. coli Total Metals Manganese, total WT# 94EB R-4 At Field Parameters Temperature, field	rameters Dbott Dr 1 (24H1749-04)   I	12.4 < 1 < 1 0.00566 Matrix: Water   S	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0.12  ampled: 2024-08-1	0.00020 3 09:20	CFU/100 mL CFU/100 mL mg/L	2024-08-14 2024-08-14 2024-08-18	
Field Parameters Temperature, field Microbiological Pa Coliforms, Total E. coli Total Metals Manganese, total WT# 94EB R-4 At Field Parameters Temperature, field Microbiological Pa	rameters Dbott Dr 1 (24H1749-04)   I	12.4 < 1 < 1 0.00566 Matrix: Water   S	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0.12  ampled: 2024-08-1	0.00020 3 09:20	CFU/100 mL CFU/100 mL mg/L	2024-08-14 2024-08-14 2024-08-18 2024-08-13	
Field Parameters Temperature, field Microbiological Parameters Coliforms, Total E. coli Total Metals Manganese, total WT# 94EB R-4 At Field Parameters Temperature, field Microbiological Parameters Coliforms, Total	rameters Dbott Dr 1 (24H1749-04)   I	12.4  < 1 < 1  0.00566  Matrix: Water   S	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0.12  ampled: 2024-08-1  AO ≤ 15  MAC = 0	0.00020 3 09:20	CFU/100 mL CFU/100 mL mg/L  °C CFU/100 mL	2024-08-14 2024-08-14 2024-08-18 2024-08-13	





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REPORTED TO	Quesnel, City of	WORK ORDER	24H1749
PROJECT	Monthly Reservoirs	REPORTED	2024-08-21 10:54

						0
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94EC R-4 Abbott Dr 2 (24H1749	-05)   Matrix: Water   Sa	ampled: 2024-08-1	3 09:30			
Field Parameters						
Temperature, field	13.1	AO ≤ 15		°C	2024-08-13	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-08-14	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-08-14	
Total Metals						
Manganese, total	0.00237	MAC = 0.12	0.00020	mg/L	2024-08-19	
Temperature, field	12.7	AO ≤ 15		°C	2024-08-13	
Field Parameters						
Temperature, field	12.7	AO ≤ 15		°C	2024-08-13	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-08-14	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-08-14	
Total Metals						
Manganese, total	0.0195	MAC = 0.12	0.00020	mg/L	2024-08-18	
WT# 94FF R-6 New Tatchell Reserv	(24H1749-07)   Matrix: \	Water   Sampled: 2	024-08-13 13	3:30		
	12.6	AO ≤ 15		°C	2024-08-13	
Temperature, field	12.0	AO = 10		<u> </u>	2024-00-13	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0		CFU/100 mL	2024-08-14	
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-08-14	
Total Metals						





REPORTED TO

Quesnel, City of

PROJECT Monthly Reservoirs

WORK ORDER

REPORTED

24H1749

2024-08-21 10:54

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	1	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

#### Glossary of Terms:

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< Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

PO NUMBER

**PROJECT** 

Monthly Reservoirs

PROJECT INFO

WORK ORDER

2411335

RECEIVED / TEMP

2024-09-11 14:38 / 11.8°C

REPORTED

2024-09-18 14:51

COC NUMBER

No Number

### Introduction:

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You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

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If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead Account Manager M what

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REPORTED TO Quesnel, PROJECT Monthly F	City of Reservoirs			WORK ORDER REPORTED	24I1335 2024-09-1	8 14:51
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
NT# 94EA R-1 Shadow Heig	hts (24l1335-01)   Matrix: Water	r   Sampled: 2024-	09-10 07:45			
Field Parameters						
Temperature, field	10.2	AO ≤ 15		°C	2024-09-10	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-09-11	нтз
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-09-11	НТ3
Total Metals						
Manganese, total	0.105	MAC = 0.12	0.00020	mg/L	2024-09-14	
- Indian American	1335-02)   Matrix: Water   Samp	oled: 2024-09-10 0	8:35			
Field Parameters	9.0	AO ≤ 15		°C	2024-09-10	
Temperature, field	9.0	AO 5 15		C	2024-09-10	
Microbiological Parameters		44.5		Tallera Library		
Coliforms, Total  E. coli	<1	MAC = 0 MAC = 0		CFU/100 mL	2024-09-11	HT3
		IVIAC - 0	- 1	CPO/100 IIIL	2024-09-11	піз
Total Metals						
Manganese, total	0.360	MAC = 0.12	0.00020	mg/L	2024-09-14	
WT# 94FA R-3 Sugar Loaf (2	24l1335-03)   Matrix: Water   Sar	npled: 2024-09-10	09:05			
Field Parameters						
Temperature, field	10.9	AO ≤ 15		°C	2024-09-10	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-09-11	НТ3
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-09-11	НТ3
Total Metals						
Manganese, total	0.00510	MAC = 0.12	0.00020	mg/L	2024-09-15	
	24l1335-04)   Matrix: Water   Sa	mpled: 2024-09-10	09:55			
Field Parameters	The U	A Resident		***	0001.00.15	
Temperature, field	12.9	AO ≤ 15		°C	2024-09-10	
Microbiological Parameters						
Coliforms, Total	<1	MAC = 0		CFU/100 mL	2024-09-11	
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-09-11	
T-4-1 M-4-1-						
Total Metals			0.00020			





REPORTED TO PROJECT

Quesnel, City of Monthly Reservoirs WORK ORDER

2411335

REPORTED

2024-09-18 14:51

PROJECT Monthly Reservoir	5			REPORTED	2024-09-1	0 14.51
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
NT# 94EC R-4 Abbott Dr 2 (24I1335-	05)   Matrix: Water   Sa	mpled: 2024-09-10	16:50			
Field Parameters						
Temperature, field	12.9	AO ≤ 15		°C	2024-09-10	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-09-11	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-09-11	
Total Metals						
Manganese, total	0.00082	MAC = 0.12	0.00020	mg/L	2024-09-14	
Field Parameters	40.4	10 - 15		*6	2024 00 40	
	The State of the S					
Temperature, field	12.1	AO ≤ 15		°C	2024-09-10	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-09-11	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-09-11	
Total Metals						
Manganese, total	0.0614	MAC = 0.12	0.00020	mg/L	2024-09-14	
WT# 94FF R-6 New Tatchell Reserv	(24I1335-07)   Matrix: W	/ater   Sampled: 20	24-09-10 11:	25		
Field Parameters						
Temperature, field	13.0	AO ≤ 15		°C	2024-09-10	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-09-11	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-09-11	
Total Metals						
	0.0103	MAC = 0.12	0.00020		2024-09-14	

#### Sample Qualifiers:

HT3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.



REPORTED TO Quesnel, City of PROJECT Monthly Reservoirs

WORK ORDER REPORTED 2411335

2024-09-18 14:51

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	<b>V</b>	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

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Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

PO NUMBER

**PROJECT** 

Monthly Reservoirs

**PROJECT INFO** 

WORK ORDER

24K0642

RECEIVED / TEMP

2024-11-06 13:37 / 8.7°C

REPORTED **COC NUMBER**  2024-11-13 16:54

No Number

#### Introduction:

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Authorized By:

Hanane El Hannaoui Junior Account Manager

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PROJECT	Quesnel, City of Monthly Reservoirs				WORK ORDER REPORTED	24K0642 2024-11-1	3 16:54
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94EA R-1 Sha	adow Heights (24K0642-0	1)   Matrix: Wate	er   Sampled: 2024	-11-05 11:00			
Field Parameters				i i i i i i i i i i i i i i i i i i i			
Temperature, field		8.8	AO ≤ 15		°C	2024-11-05	
Microbiological Para	ameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-11-06	
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-11-06	
Total Metals							
Manganese, total		0.0834	MAC = 0.12	0.00020	mg/L	2024-11-09	
WT# 94F9 R-2 Pin	ecrest (24K0642-02)   Mat	rix: Water   Sam	pled: 2024-11-05 1	1:30			
Field Parameters							
Temperature, field	-3	8.5	AO ≤ 15		°C	2024-11-05	
Microbiological Para	ameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-11-06	
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-11-06	
Total Metals							
Total Metals  Manganese, total		0.303	MAC = 0.12	0.00020	mg/L	2024-11-08	
Manganese, total	gar Loaf (24K0642-03)   Ma	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			mg/L °C	2024-11-08	
Manganese, total  WT# 94FA R-3 Sug  Field Parameters  Temperature, field		atrix: Water   Sa	mpled: 2024-11-05				
Manganese, total  WT# 94FA R-3 Sug  Field Parameters  Temperature, field		atrix: Water   Sa	mpled: 2024-11-05	12:45			
Manganese, total  WT# 94FA R-3 Sug  Field Parameters  Temperature, field  Microbiological Parameters		atrix: Water   Sa	mpled: <b>2024-11-05</b> AO ≤ 15	i <b>12:45</b>	°C	2024-11-05	
Manganese, total  WT# 94FA R-3 Sug  Field Parameters  Temperature, field  Microbiological Para  Coliforms, Total		9.0 < 1	mpled: <b>2024-11-05</b> AO ≤ 15  MAC = 0	i <b>12:45</b>	°C CFU/100 mL	2024-11-05	
Manganese, total  WT# 94FA R-3 Sug  Field Parameters  Temperature, field  Microbiological Para  Coliforms, Total  E. coli		9.0 < 1	mpled: <b>2024-11-05</b> AO ≤ 15  MAC = 0	i <b>12:45</b>	°C  CFU/100 mL  CFU/100 mL	2024-11-05	
Manganese, total  WT# 94FA R-3 Sug  Field Parameters  Temperature, field  Microbiological Para  Coliforms, Total  E. coli  Total Metals  Manganese, total  WT# 94EB R-4 Ab		9.0 < 1 < 1 0.00820	MAC = 0 MAC = 0.12	1 1 0.00020	°C  CFU/100 mL  CFU/100 mL	2024-11-05 2024-11-06 2024-11-06	
Manganese, total  WT# 94FA R-3 Sug  Field Parameters  Temperature, field  Microbiological Para  Coliforms, Total  E. coli  Total Metals  Manganese, total  WT# 94EB R-4 Ab  Field Parameters	ameters	9.0 < 1 < 1 0.00820 latrix: Water   Sa	MAC = 0 MAC = 0 MAC = 0 MAC = 0 MAC = 0.12	1 1 0.00020	°C  CFU/100 mL  CFU/100 mL  mg/L	2024-11-05 2024-11-06 2024-11-08	
Manganese, total  WT# 94FA R-3 Sug  Field Parameters  Temperature, field  Microbiological Para  Coliforms, Total  E. coli  Total Metals  Manganese, total  WT# 94EB R-4 Ab  Field Parameters  Temperature, field	ameters bott Dr 1 (24K0642-04)   N	9.0 < 1 < 1 0.00820	MAC = 0 MAC = 0.12	1 1 0.00020	°C  CFU/100 mL  CFU/100 mL	2024-11-05 2024-11-06 2024-11-06	
Manganese, total  WT# 94FA R-3 Sug  Field Parameters  Temperature, field  Microbiological Para  Coliforms, Total  E. coli  Total Metals  Manganese, total  WT# 94EB R-4 Ab  Field Parameters	ameters bott Dr 1 (24K0642-04)   N	9.0 < 1 < 1 0.00820 latrix: Water   Sa	MAC = 0 MAC = 0 MAC = 0 MAC = 0 MAC = 0.12	1 1 0.00020	°C  CFU/100 mL  CFU/100 mL  mg/L	2024-11-05 2024-11-06 2024-11-08	
Manganese, total  WT# 94FA R-3 Sug  Field Parameters  Temperature, field  Microbiological Para  Coliforms, Total  E. coli  Total Metals  Manganese, total  WT# 94EB R-4 Abb  Field Parameters  Temperature, field  Microbiological Para  Coliforms, Total	ameters bott Dr 1 (24K0642-04)   N	9.0  <1 <1 0.00820  latrix: Water   Si 8.0  <1	MAC = 0  MAC = 0  MAC = 0  MAC = 0.12  AO ≤ 15  MAC = 0.12	1 0.00020 5 13:30	°C  CFU/100 mL  CFU/100 mL  mg/L  °C  CFU/100 mL	2024-11-05 2024-11-06 2024-11-08 2024-11-05 2024-11-05	
Manganese, total  WT# 94FA R-3 Sug  Field Parameters  Temperature, field  Microbiological Para  Coliforms, Total  E. coli  Total Metals  Manganese, total  WT# 94EB R-4 Ab  Field Parameters  Temperature, field  Microbiological Para	ameters bott Dr 1 (24K0642-04)   N	9.0 < 1 < 1 0.00820 latrix: Water   Sa	MAC = 0 MAC = 0 MAC = 0 MAC = 0 MAC = 0.12  MAC = 0.12	1 0.00020 5 13:30	°C  CFU/100 mL  CFU/100 mL  mg/L  °C	2024-11-05 2024-11-06 2024-11-08 2024-11-08	





REPORTED TO

Quesnel, City of Monthly Reservoirs WORK ORDER

24K0642 2024-11-13 16:54

PROJECT Monthly Reservoir	S			REPORTED	2024-11-1	3 16:54
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
WT# 94EC R-4 Abbott Dr 2 (24K0642	-05)   Matrix: Water   Sa	ampled: 2024-11-0	5 13:35			
Field Parameters						
Temperature, field	8.3	AO ≤ 15		°C	2024-11-05	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-11-06	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-11-06	
Total Metals						
Manganese, total	0.00100	MAC = 0.12	0.00020	mg/L	2024-11-08	
Temperature, field  Microbiological Parameters	9.0	AO ≤ 15		°C	2024-11-05	
Field Parameters						
Burney Cran Transfer Control						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-11-06	
E. coli	< 1	MAC = 0		CFU/100 mL	2024-11-06	
Total Metals						
Manganese, total	0.0528	MAC = 0.12	0.00020	mg/L	2024-11-08	
WT# 94FF R-6 New Tatchell Reserv	(24K0642-07)   Matrix: \	Water   Sampled: 2	0 <mark>24-11-05</mark> 10	1:00		
Field Parameters		2000		3,67		
Temperature, field	9.6	AO ≤ 15		°C	2024-11-05	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0		CFU/100 mL	2024-11-06	
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-11-06	
Total Metals						
Manganese, total	0.00323	MAC = 0.12	0.00020	ma/l	2024-11-08	





REPORTED TO

Quesnel, City of

PROJECT Monthly Reservoirs

WORK ORDER

24K0642

REPORTED

2024-11-13 16:54

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	<b>✓</b>	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	<b>✓</b>	Richmond

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SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

PO NUMBER

PROJECT

Monthly Reservoirs

PROJECT INFO

WORK ORDER

ER 24L0841

RECEIVED / TEMP REPORTED

**COC NUMBER** 

2024-12-06 14:34 / 3.1°C

2024-12-10 19:38

No Number

#### Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks



We've Got Chemistry



Ahead of the Curve



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: https://www.caro.ca/terms-conditions

If you have any questions or concerns, please contact me at hhannaoui@caro.ca

Authorized By:

Hanane El Hannaoui Junior Account Manager Florence

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REPORTED TO Quesnel, City of WORK ORDI
PROJECT Monthly Reservoirs REPORTED

WORK ORDER 24L0841 REPORTED 2024-12-10 19:38

PROJECT Monthly Reservoir	rs			REPORTED	2024-12-1	0 19:38
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
NT# 94EA R-1 Shadow Heights (24L	.0841-01)   Matrix: Wate	er   Sampled: 2024	-12-05 11:35			
Field Parameters						
Temperature, field	7.2	AO ≤ 15		°C	2024-12-05	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-12-06	
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-12-06	
Total Metals						
Manganese, total	0.0990	MAC = 0.12	0.00020	mg/L	2024-12-10	
WT# 94F9 R-2 Pinecrest (24L0841-02	2)   Matrix: Water   Sam	pled: 2024-12-05 1	0:00			
Field Parameters						
Temperature, field	7.5	AO ≤ 15		°C	2024-12-05	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-12-06	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-12-06	
Total Metals						
Manganese, total	0.398	MAC = 0.12	0.00020	mg/L	2024-12-10	
WT# 94FA R-3 Sugar Loaf (24L0841-	03)   Matrix: Water   Sa	mpled: 2024-12-05	13:55	f-a		
Temperature, field	7.3	AO ≤ 15		°C	2024-12-05	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0		CFU/100 mL	2024-12-06	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-12-06	
Total Metals						
Manganese, total	0.0120	MAC = 0.12	0.00020	mg/L	2024-12-10	
WT# 94EB R-4 Abbott Dr 1 (24L0841	-04)   Matrix: Water   Sa	ampled: 2024-12-0	5 09:15			
Field Parameters						
Temperature, field	7.1	AO ≤ 15		°C	2024-12-05	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-12-06	
E. coli	< 1	MAC = 0		CFU/100 mL	2024-12-06	
Total Metals						
Manganese, total	0.00199	MAC = 0.12	0.00020	ma/l	2024-12-10	



REPORTED TO PROJECT

Quesnel, City of Monthly Reservoirs WORK ORDER REPORTED 24L0841 2024-12-10 19:38

PROJECT Monthly Reservoir	S			REPORTED	2024-12-1	0 19.50
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
WT# 94EC R-4 Abbott Dr 2 (24L0841	-05)   Matrix: Water   Sa	ampled: 2024-12-0	5 09:30			
Field Parameters						
Temperature, field	7.1	AO ≤ 15		°C	2024-12-05	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-12-06	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-12-06	
Total Metals						
Manganese, total	0.00224	MAC = 0.12	0.00020	mg/L	2024-12-10	
Field Parameters  Temperature, field	7.3	AO ≤ 15		°C	2024-12-05	
WT# 94FC R-5 Dragon Hill (24L0841	-06)   Matrix: Water   Sa	ampled: 2024-12-05	5 13:00			
Temperature, field	7.3	AO ≤ 15		°C	2024-12-05	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-12-06	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-12-06	
Total Metals						
Manganese, total	0.0646	MAC = 0.12	0.00020	mg/L	2024-12-10	
WT# 94FF R-6 New Tatchell Reserv	(24L0841-07)   Matrix: \	Water   Sampled: 2	024-12-05 10	):45		
Field Parameters						
Temperature, field	7.3	AO ≤ 15		°C	2024-12-05	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-12-06	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-12-06	
Total Metals						
Manganese, total	0.0877	MAC = 0.12	0.00020	ma/l	2024-12-10	





REPORTED TO

Quesnel, City of

**PROJECT** 

Monthly Reservoirs

WORK ORDER

24L0841

REPORTED

2024-12-10 19:38

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	<b>✓</b>	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	1	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

#### Glossary of Terms:

RL Reporting Limit (default)

Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

#### General Comments:

The results in this report apply to the received samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Caro will dispose of all samples within 30 days of sample receipt, unless otherwise agreed. The quality control (QC) data is available upon request

Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted red. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do <u>not</u> take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager:hhannaoui@caro.ca

Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline(s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability or responsibility for any loss attributed from the use of these guidelines in any way.







Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

ATTENTION

Joe Law

PO NUMBER

**PROJECT** 

Annual

PROJECT INFO

WORK ORDER

24G0554

RECEIVED / TEMP

2024-07-04 15:42 / 12.7°C

REPORTED COC NUMBER

2024-07-12 16:08

No Number

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Authorized By:

Brent Whitehead Account Manager M what

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REPORTED TO Quesnel, City of **WORK ORDER** 

24G0554

PROJECT Annual				REPORTED	2024-07-1	2 16:08
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
WT# 94D1 - Well 3 Rolph at Roddis (24	4G0554-01)   Matrix: V	Vater   Sampled:	2024-07-03 10	):21		
Anions						
Chloride	8.18	AO ≤ 250	0.10	mg/L	2024-07-06	
Fluoride	< 0.10	MAC = 1.5		mg/L	2024-07-06	
Nitrate (as N)	< 0.010	MAC = 10	0.010		2024-07-06	
Nitrite (as N)	< 0.010	MAC = 1	0.010		2024-07-06	
Sulfate	17.0	AO ≤ 500		mg/L	2024-07-06	
Calculated Parameters						
Aggressiveness Index	12.0	N/A		_	2024-07-12	СТ6
Hardness, Dissolved (as CaCO3)	218	N/A	0.500	ma/L	N/A	0,0
Langelier Index	-0.03	N/A	-5.0		2024-07-12	CT6
Dissolved Metals					20210112	0,0
	. 0 0050					
Aluminum, dissolved	< 0.0050	N/A	0.0050		2024-07-10	
Antimony, dissolved	< 0.00020	N/A	0.00020		2024-07-10	
Arsenic, dissolved	0.00152	N/A	0.00050		2024-07-10	
Barium, dissolved	0.0636	N/A	0.0050		2024-07-10	
Beryllium, dissolved	< 0.00010	N/A	0.00010		2024-07-10	
Bismuth, dissolved	< 0.00010	N/A	0.00010		2024-07-10	
Boron, dissolved	< 0.0500	N/A	0.0500		2024-07-10	
Cadmium, dissolved	< 0.000010	N/A	0.000010		2024-07-10	
Calcium, dissolved	56.5	N/A		mg/L	2024-07-10	
Chromium, dissolved	< 0.00050	N/A	0.00050		2024-07-10	
Cobalt, dissolved	< 0.00010	N/A	0.00010	-	2024-07-10	
Copper, dissolved	0.00218	N/A	0.00040		2024-07-10	
Iron, dissolved	< 0.010	N/A	0.010		2024-07-10	
Lead, dissolved	< 0.00020	N/A	0.00020		2024-07-10	
Lithium, dissolved	0.00113	N/A	0.00010		2024-07-10	
Magnesium, dissolved	18.6	N/A	0.010	13-0. H C	2024-07-10	
Manganese, dissolved	0.486	N/A	0.00020		2024-07-10	1104
Melyhdenym dissolved	< 0.000040	N/A	0.000040	-	2024-07-10	HG1
Molybdenum, dissolved Nickel, dissolved	0.00196	N/A	0.00010		2024-07-10	
AND THE RESIDENCE OF THE PARTY	0.00093	N/A	0.00040		2024-07-10	
Phosphorus, dissolved Potassium, dissolved	< 0.050	N/A	0.050		2024-07-10	
Selenium, dissolved	<b>2.78</b> < 0.00050	N/A	0.00050	mg/L	2024-07-10	
Silicon, dissolved		N/A N/A			2024-07-10	
Silver, dissolved	< 0.000050	N/A	0.000050	mg/L	2024-07-10	
Sodium, dissolved	9.06	N/A N/A		mg/L	2024-07-10	
Strontium, dissolved	0.293	N/A	0.0010		2024-07-10	
Sulfur, dissolved	6.1	N/A		mg/L	2024-07-10	
Tellurium, dissolved	< 0.00050	N/A	0.00050		2024-07-10	
Thallium, dissolved	< 0.00030	N/A	0.00030		2024-07-10	
Thorium, dissolved	< 0.00010	N/A	0.000020		2024-07-10	
Tin, dissolved	< 0.00010	N/A	0.00010		2024-07-10	



REPORTED TO

Quesnel, City of

**PROJECT** 

Annual

WORK ORDER

24G0554

REPORTED

PROJECT Annual				KEPOKTED	2024-07-1	2 10.00
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
WT# 94D1 - Well 3 Rolph at Roddis (24G	0554-01)   Matrix:	Water   Sampled: 20	024-07-03 10	:21, Continued		
Dissolved Metals, Continued						
Titanium, dissolved	< 0.0050	N/A	0.0050	mg/L	2024-07-10	
Tungsten, dissolved	< 0.0010	N/A	0.0010	mg/L	2024-07-10	
Uranium, dissolved	0.000482	N/A	0.000020	mg/L	2024-07-10	
Vanadium, dissolved	< 0.0050	N/A	0.0050	mg/L	2024-07-10	
Zinc, dissolved	< 0.0040	N/A	0.0040	mg/L	2024-07-10	
Zirconium, dissolved	< 0.00010	N/A	0.00010	mg/L	2024-07-10	
General Parameters						
Alkalinity, Total (as CaCO3)	202	N/A	1.0	mg/L	2024-07-08	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0	mg/L	2024-07-08	
Alkalinity, Bicarbonate (as CaCO3)	202	N/A	1.0	mg/L	2024-07-08	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0	mg/L	2024-07-08	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0	mg/L	2024-07-08	
Colour, True	< 5.0	AO ≤ 15	5.0	CU	2024-07-06	
Conductivity (EC)	448	N/A	2.0	μS/cm	2024-07-08	
рН	7.50	7.0-10.5	0.10	pH units	2024-07-08	HT2
Solids, Total Dissolved	239	AO ≤ 500	15	mg/L	2024-07-09	
Temperature, at pH	21.4	N/A		°C	2024-07-08	HT2
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-07-06	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-07-04	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-07-04	
Total Metals						
Aluminum, total	< 0.0050	OG < 0.1	0.0050	mg/L	2024-07-10	
Antimony, total	< 0.00020	MAC = 0.006	0.00020	mg/L	2024-07-10	
Arsenic, total	0.00154	MAC = 0.01	0.00050	mg/L	2024-07-10	
Barium, total	0.0619	MAC = 2	0.0050	mg/L	2024-07-10	
Beryllium, total	< 0.00010	N/A	0.00010	mg/L	2024-07-10	
Bismuth, total	< 0.00010	N/A	0.00010	mg/L	2024-07-10	
Boron, total	< 0.0500	MAC = 5	0.0500	mg/L	2024-07-10	
Cadmium, total	0.000010	MAC = 0.007	0.000010	mg/L	2024-07-10	
Calcium, total	59.2	None Required	0.20	mg/L	2024-07-10	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2024-07-10	
Cobalt, total	< 0.00010	N/A	0.00010	mg/L	2024-07-10	
Copper, total	0.00170	MAC = 2	0.00040	mg/L	2024-07-10	
Iron, total	0.015	AO ≤ 0.3	0.010	mg/L	2024-07-10	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2024-07-10	
Lithium, total	0.00115	N/A	0.00010	mg/L	2024-07-10	
Magnesium, total	20.2	None Required	0.010	mg/L	2024-07-10	
Manganese, total	0.469	MAC = 0.12	0.00020	mg/L	2024-07-10	
Mercury, total	< 0.000040	MAC = 0.001	0.000040	mg/L	2024-07-10	HG1
Molybdenum, total	0.00198	N/A	0.00010	mg/L	2024-07-10	



REPORTED TO Que

Quesnel, City of

**PROJECT** 

Annual

WORK ORDER

24G0554

REPORTED

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
NT# 94D1 - Well 3 Rolph at Roddis (2	4G0554-01)   Matrix:	Water   Sampled: 2	024-07-03 10	:21, Continu	ıed	
Fotal Metals, Continued						
Nickel, total	0.00090	N/A	0.00040	mg/L	2024-07-10	
Phosphorus, total	< 0.050	N/A	0.050	mg/L	2024-07-10	
Potassium, total	2.85	N/A	0.10	mg/L	2024-07-10	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2024-07-10	
Silicon, total	11.8	N/A	1.0	mg/L	2024-07-10	
Silver, total	< 0.000050	None Required	0.000050	mg/L	2024-07-10	
Sodium, total	9.04	AO ≤ 200	0.10	mg/L	2024-07-10	
Strontium, total	0.279	MAC = 7	0.0010	mg/L	2024-07-10	
Sulfur, total	6.4	N/A	3.0	mg/L	2024-07-10	
Tellurium, total	< 0.00050	N/A	0.00050	mg/L	2024-07-10	
Thallium, total	< 0.000020	N/A	0.000020	mg/L	2024-07-10	
Thorium, total	< 0.00010	N/A	0.00010	mg/L	2024-07-10	
Tin, total	< 0.00020	N/A	0.00020	mg/L	2024-07-10	
Titanium, total	< 0.0050	N/A	0.0050	mg/L	2024-07-10	
Tungsten, total	< 0.0010	N/A	0.0010		2024-07-10	
Uranium, total	0.000524	MAC = 0.02	0.000020		2024-07-10	
Vanadium, total	< 0.0050	N/A	0.0050	mg/L	2024-07-10	
Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2024-07-10	
Zirconium, total	< 0.00010	N/A	0.00010		2024-07-10	
folatile Organic Compounds (VOC) Benzene	< 0.5	MAC = 5	0.5	μg/L	2024-07-09	
Bromodichloromethane	< 1.0	N/A	1.0	µg/L	2024-07-09	
Bromoform	< 1.0	N/A	1.0	μg/L	2024-07-09	
Carbon tetrachloride	< 0.5	MAC = 2	0.5	μg/L	2024-07-09	
Chlorobenzene	< 1.0	AO ≤ 30	1.0	μg/L	2024-07-09	
Chloroethane	< 2.0	N/A	2.0	μg/L	2024-07-09	
Chloroform	< 1.0	N/A	1.0	μg/L	2024-07-09	
Dibromochloromethane	< 1.0	N/A	1.0	μg/L	2024-07-09	
1,2-Dibromoethane	< 0.3	N/A		μg/L	2024-07-09	
Dibromomethane	< 1.0	N/A	1.0	μg/L	2024-07-09	
1,2-Dichlorobenzene	< 0.5	AO ≤ 3	0.5	μg/L	2024-07-09	
1,3-Dichlorobenzene	< 1.0	N/A	1.0	μg/L	2024-07-09	
1,4-Dichlorobenzene	< 1.0	AO ≤ 1	1.0	μg/L	2024-07-09	
1,1-Dichloroethane	< 1.0	N/A		μg/L	2024-07-09	
1,2-Dichloroethane	< 1.0	MAC = 5	1.0	μg/L	2024-07-09	
1,1-Dichloroethylene	< 1.0	MAC = 14		μg/L	2024-07-09	
cis-1,2-Dichloroethylene	< 1.0	N/A		µg/L	2024-07-09	
trans-1,2-Dichloroethylene	< 1.0	N/A		µg/L	2024-07-09	
Dichloromethane	< 3.0	MAC = 50		μg/L	2024-07-09	
1,2-Dichloropropane	< 1.0	N/A		μg/L	2024-07-09	
1,3-Dichloropropene (cis + trans)	< 1.0	N/A		μg/L	2024-07-09	
Ethylbenzene	< 1.0	AO ≤ 1.6		μg/L	2024-07-09	



REPORTED TO Quesnel, City of

WORK ORDER

24G0554

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
NT# 94D1 - Well 3 Rolph at Roddis (240	30554-01)   Matrix: V	Vater   Sampled: 2	2024-07-03 10	:21, Continu	ed	
/olatile Organic Compounds (VOC), Contin	ued					
Methyl tert-butyl ether	< 1.0	AO ≤ 15	1.0	μg/L	2024-07-09	
Styrene	< 1.0	N/A	1.0	μg/L	2024-07-09	
1,1,2,2-Tetrachloroethane	< 0.5	N/A	0.5	μg/L	2024-07-09	
Tetrachloroethylene	< 1.0	MAC = 10	1.0	μg/L	2024-07-09	
Toluene	< 1.0	MAC = 60	1.0	μg/L	2024-07-09	
1,1,1-Trichloroethane	< 1.0	N/A	1.0	μg/L	2024-07-09	
1,1,2-Trichloroethane	< 1.0	N/A	1.0	μg/L	2024-07-09	
Trichloroethylene	< 1.0	MAC = 5	1.0	μg/L	2024-07-09	
Trichlorofluoromethane	< 1.0	N/A			2024-07-09	
Vinyl chloride	< 1.0	MAC = 2	1.0		2024-07-09	
Xylenes (total)	< 2.0	AO ≤ 20	2.0	μg/L	2024-07-09	
Surrogate: Toluene-d8	76		70-130	%	2024-07-09	
Surrogate: 4-Bromofluorobenzene	72		70-130	%	2024-07-09	
Surrogate: 1,4-Dichlorobenzene-d4	87		70-130	%	2024-07-09	
A		Water   Sampled	2024-01-00			
Anions					2024-07-06	
Karana a	17.9 < 0.10	AO ≤ 250 MAC = 1.5	0.10	mg/L	2024-07-06 2024-07-06	
Anions Chloride Fluoride	17.9 < 0.10	AO ≤ 250	0.10 0.10	mg/L mg/L		
Anions Chloride Fluoride Nitrate (as N)	17.9	AO ≤ 250 MAC = 1.5	0.10 0.10 0.010	mg/L mg/L mg/L	2024-07-06	
Anions Chloride Fluoride	17.9 < 0.10 0.011	AO ≤ 250 MAC = 1.5 MAC = 10	0.10 0.10 0.010 0.010	mg/L mg/L mg/L	2024-07-06 2024-07-06	
Anions Chloride Fluoride Nitrate (as N) Nitrite (as N) Sulfate	17.9 < 0.10 0.011 < 0.010	AO ≤ 250 MAC = 1.5 MAC = 10 MAC = 1	0.10 0.10 0.010 0.010	mg/L mg/L mg/L mg/L	2024-07-06 2024-07-06 2024-07-06	
Anions Chloride Fluoride Nitrate (as N) Nitrite (as N) Sulfate Calculated Parameters	17.9 < 0.10 0.011 < 0.010 26.5	AO ≤ 250 MAC = 1.5 MAC = 10 MAC = 1	0.10 0.10 0.010 0.010	mg/L mg/L mg/L mg/L	2024-07-06 2024-07-06 2024-07-06	CT6
Anions Chloride Fluoride Nitrate (as N) Nitrite (as N) Sulfate Calculated Parameters Aggressiveness Index	17.9 < 0.10 0.011 < 0.010	AO ≤ 250 MAC = 1.5 MAC = 10 MAC = 1 AO ≤ 500	0.10 0.10 0.010 0.010 1.0	mg/L mg/L mg/L mg/L	2024-07-06 2024-07-06 2024-07-06 2024-07-06	CT6
Anions Chloride Fluoride Nitrate (as N) Nitrite (as N) Sulfate Calculated Parameters	17.9 < 0.10 0.011 < 0.010 26.5	AO ≤ 250  MAC = 1.5  MAC = 10  MAC = 1  AO ≤ 500	0.10 0.10 0.010 0.010	mg/L mg/L mg/L mg/L	2024-07-06 2024-07-06 2024-07-06 2024-07-06 2024-07-12	CT6
Anions Chloride Fluoride Nitrate (as N) Nitrite (as N) Sulfate Calculated Parameters Aggressiveness Index Hardness, Dissolved (as CaCO3) Langelier Index	17.9 < 0.10 0.011 < 0.010 26.5	AO ≤ 250  MAC = 1.5  MAC = 10  MAC = 1  AO ≤ 500  N/A  N/A	0.10 0.10 0.010 0.010 1.0	mg/L mg/L mg/L mg/L	2024-07-06 2024-07-06 2024-07-06 2024-07-06 2024-07-12 N/A	
Anions Chloride Fluoride Nitrate (as N) Nitrite (as N) Sulfate Calculated Parameters Aggressiveness Index Hardness, Dissolved (as CaCO3) Langelier Index Dissolved Metals	17.9 < 0.10 0.011 < 0.010 26.5 12.3 284 0.3	AO ≤ 250  MAC = 1.5  MAC = 10  MAC = 1  AO ≤ 500  N/A  N/A  N/A	0.10 0.10 0.010 0.010 1.0 0.500 -5.0	mg/L mg/L mg/L mg/L mg/L mg/L	2024-07-06 2024-07-06 2024-07-06 2024-07-06 2024-07-12 N/A 2024-07-12	
Anions Chloride Fluoride Nitrate (as N) Nitrite (as N) Sulfate Calculated Parameters Aggressiveness Index Hardness, Dissolved (as CaCO3) Langelier Index Dissolved Metals Aluminum, dissolved	17.9 < 0.10 0.011 < 0.010 26.5	AO ≤ 250  MAC = 1.5  MAC = 10  MAC = 1  AO ≤ 500  N/A  N/A	0.10 0.10 0.010 0.010 1.0 0.500 -5.0	mg/L mg/L mg/L mg/L mg/L mg/L mg/L	2024-07-06 2024-07-06 2024-07-06 2024-07-06 2024-07-12 N/A	
Anions Chloride Fluoride Nitrate (as N) Nitrite (as N) Sulfate Calculated Parameters Aggressiveness Index Hardness, Dissolved (as CaCO3) Langelier Index Dissolved Metals Aluminum, dissolved Antimony, dissolved	17.9 < 0.10 0.011 < 0.010 26.5  12.3 284 0.3	AO ≤ 250  MAC = 1.5  MAC = 10  MAC = 1  AO ≤ 500  N/A  N/A  N/A  N/A  N/A	0.10 0.10 0.010 0.010 1.0 0.500 -5.0	mg/L mg/L mg/L mg/L mg/L mg/L mg/L c mg/L mg/L	2024-07-06 2024-07-06 2024-07-06 2024-07-06 2024-07-12 N/A 2024-07-12	
Anions Chloride Fluoride Nitrate (as N) Nitrite (as N) Sulfate Calculated Parameters Aggressiveness Index Hardness, Dissolved (as CaCO3) Langelier Index Dissolved Metals Aluminum, dissolved	17.9 < 0.10 0.011 < 0.010 26.5  12.3 284 0.3  < 0.0050 < 0.00020	AO ≤ 250  MAC = 1.5  MAC = 10  MAC = 1  AO ≤ 500  N/A  N/A  N/A  N/A	0.10 0.10 0.010 0.010 1.0 0.500 -5.0 0.0050 0.00020	mg/L mg/L mg/L mg/L mg/L  mg/L mg/L mg/L mg/L mg/L	2024-07-06 2024-07-06 2024-07-06 2024-07-12 N/A 2024-07-12 2024-07-10	
Anions Chloride Fluoride Nitrate (as N) Nitrite (as N) Sulfate Calculated Parameters Aggressiveness Index Hardness, Dissolved (as CaCO3) Langelier Index Dissolved Metals Aluminum, dissolved Antimony, dissolved Arsenic, dissolved	17.9 < 0.10 0.011 < 0.010 26.5  12.3 284 0.3  < 0.0050 < 0.00020 0.00055	AO ≤ 250  MAC = 1.5  MAC = 10  MAC = 1  AO ≤ 500  N/A  N/A  N/A  N/A  N/A  N/A	0.10 0.10 0.010 0.010 1.0 0.500 -5.0 0.0050 0.00020 0.00050	mg/L mg/L mg/L mg/L mg/L - mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	2024-07-06 2024-07-06 2024-07-06 2024-07-12 N/A 2024-07-12 2024-07-10 2024-07-10 2024-07-10	
Anions Chloride Fluoride Nitrate (as N) Nitrite (as N) Sulfate Calculated Parameters Aggressiveness Index Hardness, Dissolved (as CaCO3) Langelier Index Dissolved Metals Aluminum, dissolved Antimony, dissolved Arsenic, dissolved Barium, dissolved	17.9 < 0.10 0.011 < 0.010 26.5  12.3 284 0.3  < 0.0050 < 0.00020 0.00055 0.0826	AO ≤ 250  MAC = 1.5  MAC = 10  MAC = 1  AO ≤ 500  N/A  N/A  N/A  N/A  N/A  N/A  N/A  N	0.10 0.10 0.010 0.010 1.0 0.500 -5.0 0.0050 0.00050 0.00050	mg/L mg/L mg/L mg/L mg/L  - mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	2024-07-06 2024-07-06 2024-07-06 2024-07-06 2024-07-12 N/A 2024-07-12 2024-07-10 2024-07-10 2024-07-10	
Anions Chloride Fluoride Nitrate (as N) Nitrite (as N) Sulfate Calculated Parameters Aggressiveness Index Hardness, Dissolved (as CaCO3) Langelier Index Dissolved Metals Aluminum, dissolved Antimony, dissolved Barium, dissolved Beryllium, dissolved	17.9 < 0.10 0.011 < 0.010 26.5  12.3 284 0.3  < 0.0050 < 0.00020 0.00055 0.0826 < 0.00010	AO ≤ 250  MAC = 1.5  MAC = 10  MAC = 1  AO ≤ 500  N/A  N/A  N/A  N/A  N/A  N/A  N/A  N	0.10 0.10 0.010 0.010 1.0 0.500 -5.0 0.0050 0.00020 0.00050 0.0050 0.0050	mg/L mg/L mg/L mg/L mg/L	2024-07-06 2024-07-06 2024-07-06 2024-07-06 2024-07-12 N/A 2024-07-12 2024-07-10 2024-07-10 2024-07-10 2024-07-10 2024-07-10	
Anions Chloride Fluoride Nitrate (as N) Nitrite (as N) Sulfate Calculated Parameters Aggressiveness Index Hardness, Dissolved (as CaCO3) Langelier Index Dissolved Metals Aluminum, dissolved Antimony, dissolved Arsenic, dissolved Barium, dissolved Beryllium, dissolved Bismuth, dissolved	17.9 < 0.10 0.011 < 0.010 26.5  12.3 284 0.3  < 0.0050 < 0.00020 0.00055 0.0826 < 0.00010 < 0.00010	AO ≤ 250  MAC = 1.5  MAC = 10  MAC = 1  AO ≤ 500  N/A  N/A  N/A  N/A  N/A  N/A  N/A  N	0.10 0.10 0.010 0.010 1.0 0.500 -5.0 0.0050 0.00020 0.00050 0.00050 0.00010	mg/L mg/L mg/L mg/L mg/L  mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	2024-07-06 2024-07-06 2024-07-06 2024-07-06 2024-07-12 N/A 2024-07-12 2024-07-10 2024-07-10 2024-07-10 2024-07-10 2024-07-10 2024-07-10	
Anions Chloride Fluoride Nitrate (as N) Nitrite (as N) Sulfate Calculated Parameters Aggressiveness Index Hardness, Dissolved (as CaCO3) Langelier Index Dissolved Metals Aluminum, dissolved Antimony, dissolved Arsenic, dissolved Barium, dissolved Beryllium, dissolved Bismuth, dissolved Boron, dissolved	17.9 < 0.10 0.011 < 0.010 26.5  12.3 284 0.3  < 0.0050 < 0.00020 0.00055 0.0826 < 0.00010 < 0.00010 < 0.0500	AO ≤ 250  MAC = 1.5  MAC = 10  MAC = 1  AO ≤ 500  N/A  N/A  N/A  N/A  N/A  N/A  N/A  N	0.10 0.10 0.010 0.010 1.0 0.500 -5.0 0.0050 0.00050 0.00010 0.00010 0.000010	mg/L mg/L mg/L mg/L mg/L  mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	2024-07-06 2024-07-06 2024-07-06 2024-07-06 2024-07-12 N/A 2024-07-12 2024-07-10 2024-07-10 2024-07-10 2024-07-10 2024-07-10 2024-07-10 2024-07-10	
Anions Chloride Fluoride Nitrate (as N) Nitrite (as N) Sulfate Calculated Parameters Aggressiveness Index Hardness, Dissolved (as CaCO3) Langelier Index Dissolved Metals Aluminum, dissolved Antimony, dissolved Arsenic, dissolved Barium, dissolved Beryllium, dissolved Bismuth, dissolved Boron, dissolved Cadmium, dissolved Cadmium, dissolved	17.9 < 0.10 0.011 < 0.010 26.5  12.3 284 0.3  < 0.0050 < 0.00020 0.00055 0.0826 < 0.00010 < 0.00010 < 0.0500 0.00030	AO ≤ 250  MAC = 1.5  MAC = 10  MAC = 1  AO ≤ 500  N/A  N/A  N/A  N/A  N/A  N/A  N/A  N	0.10 0.10 0.010 0.010 1.0 0.500 -5.0 0.0050 0.00050 0.00010 0.00010 0.000010	mg/L mg/L mg/L mg/L mg/L - mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	2024-07-06 2024-07-06 2024-07-06 2024-07-06 2024-07-12 N/A 2024-07-12 2024-07-10 2024-07-10 2024-07-10 2024-07-10 2024-07-10 2024-07-10 2024-07-10 2024-07-10	
Anions Chloride Fluoride Nitrate (as N) Nitrite (as N) Sulfate Calculated Parameters Aggressiveness Index Hardness, Dissolved (as CaCO3) Langelier Index Dissolved Metals Aluminum, dissolved Antimony, dissolved Barium, dissolved Beryllium, dissolved Bismuth, dissolved Boron, dissolved Cadmium, dissolved Cadmium, dissolved Calcium, dissolved Chromium, dissolved	17.9 < 0.10 0.011 < 0.010 26.5  12.3 284 0.3  < 0.0050 < 0.00020 0.00055 0.0826 < 0.00010 < 0.00010 < 0.0500 0.00030 74.9	AO ≤ 250  MAC = 1.5  MAC = 10  MAC = 1  AO ≤ 500  N/A  N/A  N/A  N/A  N/A  N/A  N/A  N	0.10 0.10 0.010 0.010 1.0 0.500 -5.0 0.0050 0.00050 0.0050 0.00010 0.00010 0.000010 0.000010	mg/L	2024-07-06 2024-07-06 2024-07-06 2024-07-06 2024-07-12 N/A 2024-07-12 2024-07-10 2024-07-10 2024-07-10 2024-07-10 2024-07-10 2024-07-10 2024-07-10 2024-07-10 2024-07-10	
Anions Chloride Fluoride Nitrate (as N) Nitrite (as N) Sulfate Calculated Parameters Aggressiveness Index Hardness, Dissolved (as CaCO3) Langelier Index Dissolved Metals Aluminum, dissolved Antimony, dissolved Barium, dissolved Beryllium, dissolved Bismuth, dissolved Boron, dissolved Cadmium, dissolved Cadmium, dissolved Calcium, dissolved	17.9 < 0.10 0.011 < 0.010 26.5  12.3 284 0.3  < 0.0050 < 0.00020 0.00055 0.0826 < 0.00010 < 0.00010 < 0.0500 0.00030 74.9 < 0.00050	AO ≤ 250  MAC = 1.5  MAC = 10  MAC = 1  AO ≤ 500  N/A  N/A  N/A  N/A  N/A  N/A  N/A  N	0.10 0.10 0.010 0.010 1.0 0.500 -5.0 0.0050 0.00050 0.00010 0.00010 0.000010 0.20 0.00050	mg/L mg/L mg/L mg/L mg/L	2024-07-06 2024-07-06 2024-07-06 2024-07-06 2024-07-12 N/A 2024-07-10 2024-07-10 2024-07-10 2024-07-10 2024-07-10 2024-07-10 2024-07-10 2024-07-10 2024-07-10 2024-07-10 2024-07-10 2024-07-10	



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Analyte	Result	Guideline	RL	Units	Analyzed	Qualifi
WT# 94DC - Well 6 Rolph/Robertson (24 Continued	G0554-02)   Matrix:	Water   Sampled:	2024-07-03 1	0:36,		
Dissolved Metals, Continued						
Lead, dissolved	< 0.00020	N/A	0.00020	mg/L	2024-07-10	
Lithium, dissolved	0.00184	N/A	0.00010	mg/L	2024-07-10	
Magnesium, dissolved	23.4	N/A	0.010	mg/L	2024-07-10	
Manganese, dissolved	0.202	N/A	0.00020	mg/L	2024-07-10	
Mercury, dissolved	< 0.000040	N/A	0.000040	mg/L	2024-07-10	HG1
Molybdenum, dissolved	0.00147	N/A	0.00010		2024-07-10	1505
Nickel, dissolved	0.00206	N/A	0.00040		2024-07-10	
Phosphorus, dissolved	< 0.050	N/A	0.050		2024-07-10	
Potassium, dissolved	3.86	N/A		mg/L	2024-07-10	
Selenium, dissolved	0.00072	N/A	0.00050		2024-07-10	
Silicon, dissolved	10.7	N/A		mg/L	2024-07-10	
Silver, dissolved	< 0.000050	N/A	0.000050		2024-07-10	
Sodium, dissolved	10.5	N/A		mg/L	2024-07-10	
Strontium, dissolved	0.358	N/A	0.0010		2024-07-10	
Sulfur, dissolved	9.3	N/A		mg/L	2024-07-10	
Tellurium, dissolved	< 0.00050	N/A	0.00050		2024-07-10	
Thallium, dissolved	< 0.000020	N/A	0.000020		2024-07-10	
Thorium, dissolved	< 0.00010	N/A	0.00010		2024-07-10	
Tin, dissolved	< 0.00010	N/A	0.00010		2024-07-10	
Titanium, dissolved	< 0.0050	N/A	0.0050		2024-07-10	
Tungsten, dissolved	< 0.0010	N/A	0.0010		2024-07-10	
Uranium, dissolved	0.00102	N/A	0.000020		2024-07-10	
Vanadium, dissolved	< 0.0050	N/A	0.0050		2024-07-10	
Zinc, dissolved	< 0.0040	N/A	0.0040		2024-07-10	
Zirconium, dissolved	< 0.00010	N/A	0.00010		2024-07-10	
General Parameters	4 0.00010	14/7	0.00010	mg/L	2024-07-10	
	054	NI/A	4.0		2024 07 00	
Alkalinity, Total (as CaCO3)	251	N/A		mg/L	2024-07-08	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A		mg/L	2024-07-08	
Alkalinity, Bicarbonate (as CaCO3)	251	N/A		mg/L	2024-07-08	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A		mg/L	2024-07-08	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A		mg/L	2024-07-08	
Colour, True	< 5.0	AO ≤ 15		CU	2024-07-06	
Conductivity (EC)	583	N/A		μS/cm	2024-07-08	
pH	7.60	7.0-10.5		pH units	2024-07-08	HT2
Solids, Total Dissolved	308	AO ≤ 500	15	mg/L	2024-07-09	
Temperature, at pH	21.0	N/A	2.041	°C	2024-07-08	HT2
Turbidity	0.23	OG < 1	0.10	NTU	2024-07-06	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-07-04	
E. coli	< 1	MAC = 0		CFU/100 mL	2024-07-04	



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Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94DC - Well 6 Rolph/Robertson (24 Continued	1G0554-02)   Matrix	: Water   Sampled:	2024-07-03 1	0:36,		
Total Metals						
Aluminum, total	< 0.0050	OG < 0.1	0.0050	mg/L	2024-07-10	
Antimony, total	< 0.00020	MAC = 0.006	0.00020	mg/L	2024-07-10	
Arsenic, total	0.00065	MAC = 0.01	0.00050	mg/L	2024-07-10	
Barium, total	0.0808	MAC = 2	0.0050	mg/L	2024-07-10	
Beryllium, total	< 0.00010	N/A	0.00010		2024-07-10	
Bismuth, total	< 0.00010	N/A	0.00010		2024-07-10	
Boron, total	< 0.0500	MAC = 5	0.0500	mg/L	2024-07-10	
Cadmium, total	0.000033	MAC = 0.007	0.000010	mg/L	2024-07-10	
Calcium, total	78.3	None Required	0.20	mg/L	2024-07-10	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2024-07-10	
Cobalt, total	0.00011	N/A	0.00010	mg/L	2024-07-10	
Copper, total	0.00272	MAC = 2	0.00040	mg/L	2024-07-10	
Iron, total	0.024	AO ≤ 0.3	0.010		2024-07-10	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2024-07-10	
Lithium, total	0.00195	N/A	0.00010		2024-07-10	
Magnesium, total	26.5	None Required	0.010		2024-07-10	
Manganese, total	0.211	MAC = 0.12	0.00020		2024-07-10	
Mercury, total	< 0.000040	MAC = 0.001	0.000040	mg/L	2024-07-10	HG1
Molybdenum, total	0.00145	N/A	0.00010		2024-07-10	
Nickel, total	0.00227	N/A	0.00040		2024-07-10	
Phosphorus, total	< 0.050	N/A	0.050		2024-07-10	
Potassium, total	3.88	N/A		mg/L	2024-07-10	
Selenium, total	0.00067	MAC = 0.05	0.00050		2024-07-10	
Silicon, total	11.2	N/A		mg/L	2024-07-10	
Silver, total	< 0.000050	None Required	0.000050		2024-07-10	
Sodium, total	11.0	AO ≤ 200		mg/L	2024-07-10	
Strontium, total	0.346	MAC = 7	0.0010		2024-07-10	
Sulfur, total	9.7	N/A		mg/L	2024-07-10	
Tellurium, total	< 0.00050	N/A	0.00050		2024-07-10	
Thallium, total	< 0.000020	N/A	0.000020		2024-07-10	
Thorium, total	< 0.00010	N/A	0.00010		2024-07-10	
Tin, total	< 0.00020	N/A	0.00020	mg/L	2024-07-10	
Titanium, total	< 0.0050	N/A	0.0050		2024-07-10	
Tungsten, total	< 0.0010	N/A	0.0010		2024-07-10	
Uranium, total	0.00109	MAC = 0.02	0.000020		2024-07-10	
Vanadium, total	< 0.0050	N/A	0.0050		2024-07-10	
Zinc, total	0.0042	AO ≤ 5	0.0040		2024-07-10	
Zirconium, total	< 0.00010	N/A	0.00010		2024-07-10	
Volatile Organic Compounds (VOC)						
Benzene	< 0.5	MAC = 5	0.5	μg/L	2024-07-10	
Bromodichloromethane	< 1.0	N/A		μg/L	2024-07-10	
Bromoform	< 1.0	N/A		μg/L	2024-07-10	



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Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
NT# 94DC - Well 6 Rolph/Robertson (24G05 Continued	554-02)   Matrix:	Water   Sampled:	2024-07-03 1	10:36,		
/olatile Organic Compounds (VOC), Continued						
Carbon tetrachloride	< 0.5	MAC = 2	0.5	μg/L	2024-07-10	
Chlorobenzene	< 1.0	AO ≤ 30		μg/L	2024-07-10	
Chloroethane	< 2.0	N/A		μg/L	2024-07-10	
Chloroform	< 1.0	N/A	1.0	μg/L	2024-07-10	
Dibromochloromethane	< 1.0	N/A	1.0	μg/L	2024-07-10	
1,2-Dibromoethane	< 0.3	N/A		μg/L	2024-07-10	
Dibromomethane	< 1.0	N/A	1.0	μg/L	2024-07-10	
1,2-Dichlorobenzene	< 0.5	AO ≤ 3	0.5	μg/L	2024-07-10	
1,3-Dichlorobenzene	< 1.0	N/A	1.0		2024-07-10	
1,4-Dichlorobenzene	< 1.0	AO ≤ 1	1.0		2024-07-10	
1,1-Dichloroethane	< 1.0	N/A	1.0	μg/L	2024-07-10	
1,2-Dichloroethane	< 1.0	MAC = 5		μg/L	2024-07-10	
1,1-Dichloroethylene	< 1.0	MAC = 14	1.0	µg/L	2024-07-10	
cis-1,2-Dichloroethylene	< 1.0	N/A		μg/L	2024-07-10	
trans-1,2-Dichloroethylene	< 1.0	N/A		μg/L	2024-07-10	
Dichloromethane	< 3.0	MAC = 50		µg/L	2024-07-10	
1,2-Dichloropropane	< 1.0	N/A		μg/L	2024-07-10	
1,3-Dichloropropene (cis + trans)	< 1.0	N/A		μg/L	2024-07-10	
Ethylbenzene	< 1.0	AO ≤ 1.6		μg/L	2024-07-10	
Methyl tert-butyl ether	< 1.0	AO ≤ 15		μg/L	2024-07-10	
Styrene	< 1.0	N/A	1.0	μg/L	2024-07-10	
1,1,2,2-Tetrachloroethane	< 0.5	N/A		μg/L	2024-07-10	
Tetrachloroethylene	< 1.0	MAC = 10		μg/L	2024-07-10	
Toluene	< 1.0	MAC = 60		µg/L	2024-07-10	
1,1,1-Trichloroethane	< 1.0	N/A	1.0		2024-07-10	
1,1,2-Trichloroethane	< 1.0	N/A	1.0		2024-07-10	
Trichloroethylene	< 1.0	MAC = 5	1.0		2024-07-10	
Trichlorofluoromethane	< 1.0	N/A	1.0	μg/L	2024-07-10	
Vinyl chloride	< 1.0	MAC = 2		μg/L	2024-07-10	
Xylenes (total)	< 2.0	AO ≤ 20		μg/L	2024-07-10	
Surrogate: Toluene-d8	81	727 - 122	70-130	%	2024-07-10	
Surrogate: 4-Bromofluorobenzene	77		70-130	%	2024-07-10	
Surrogate: 1,4-Dichlorobenzene-d4	93		70-130	%	2024-07-10	

### WT# 94E0 - Well 7 N. Fraser Drive (24G0554-03) | Matrix: Water | Sampled: 2024-07-03 13:07

Anions					
Chloride	8.31	AO ≤ 250	0.10	mg/L	2024-07-06
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	2024-07-06
Nitrate (as N)	0.066	MAC = 10	0.010	mg/L	2024-07-06
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2024-07-06
Sulfate	19.8	AO ≤ 500	1.0	mg/L	2024-07-06



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WORK ORDER

24G0554

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PROJECT				KEFOKTED	2024-07-1	2 10.00
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
NT# 94E0 - Well 7 N. Fraser Drive (24	G0554-03)   Matrix: W	ater   Sampled: 20	024-07-03 13:	07, Continued		
Calculated Parameters						
Aggressiveness Index	11.8	N/A		4	2024-07-12	CT6
Hardness, Dissolved (as CaCO3)	202	N/A	0.500	mg/L	N/A	
Langelier Index	-0.2	N/A	-5.0		2024-07-12	CT6
Dissolved Metals						
Aluminum, dissolved	< 0.0050	N/A	0.0050	ma/L	2024-07-10	
Antimony, dissolved	< 0.00020	N/A	0.00020		2024-07-10	
Arsenic, dissolved	< 0.00050	N/A	0.00050		2024-07-10	
Barium, dissolved	0.0344	N/A	0.0050		2024-07-10	
Beryllium, dissolved	< 0.00010	N/A	0.00010		2024-07-10	
Bismuth, dissolved	< 0.00010	N/A	0.00010		2024-07-10	
Boron, dissolved	< 0.0500	N/A	0.0500		2024-07-10	
Cadmium, dissolved	< 0.000010	N/A	0.000010		2024-07-10	
Calcium, dissolved	55.9	N/A		mg/L	2024-07-10	
Chromium, dissolved	< 0.00050	N/A	0.00050	-	2024-07-10	
Cobalt, dissolved	< 0.00010	N/A	0.00010		2024-07-10	
Copper, dissolved	0.00221	N/A	0.00040		2024-07-10	
Iron, dissolved	< 0.010	N/A		mg/L	2024-07-10	
Lead, dissolved	< 0.00020	N/A	0.00020		2024-07-10	
Lithium, dissolved	0.00139	N/A	0.00010		2024-07-10	
Magnesium, dissolved	15.1	N/A		mg/L	2024-07-10	
Manganese, dissolved	0.0221	N/A	0.00020		2024-07-10	
Mercury, dissolved	< 0.000040	N/A	0.000040		2024-07-10	HG1
Molybdenum, dissolved	0.00114	N/A	0.00010		2024-07-10	1.0.
Nickel, dissolved	0.00079	N/A	0.00040		2024-07-10	
Phosphorus, dissolved	< 0.050	N/A		mg/L	2024-07-10	
Potassium, dissolved	1.92	N/A		mg/L	2024-07-10	
Selenium, dissolved	0.00191	N/A	0.00050		2024-07-10	
Silicon, dissolved	6.3	N/A		mg/L	2024-07-10	
Silver, dissolved	< 0.000050	N/A	0.000050		2024-07-10	
Sodium, dissolved	6.83	N/A	5090.5800A170Z1	mg/L	2024-07-10	
Strontium, dissolved	0.229	N/A	0.0010		2024-07-10	
Sulfur, dissolved	7.0	N/A		mg/L	2024-07-10	
Tellurium, dissolved	< 0.00050	N/A	0.00050		2024-07-10	
Thallium, dissolved	< 0.000020	N/A	0.000020		2024-07-10	
Thorium, dissolved	< 0.00010	N/A	0.00010		2024-07-10	
Tin, dissolved	< 0.00010	N/A	0.00010		2024-07-10	
Titanium, dissolved	< 0.0050	N/A		mg/L	2024-07-10	
Tungsten, dissolved	< 0.0010	N/A		mg/L	2024-07-10	
Uranium, dissolved	0.000861	N/A	0.000020		2024-07-10	
Vanadium, dissolved	< 0.0050	N/A		mg/L	2024-07-10	
Zinc, dissolved	< 0.0040	N/A		mg/L	2024-07-10	
Ziric, dissolved Zirconium, dissolved	< 0.0040	N/A	0.00010		2024-07-10	
Zircoriium, dissolved	~ 0.00010	14/74	0.00010	mg/L	2024-07-10	



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**REPORTED** 2024-07-12 16:08

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94E0 - Well 7 N. Fraser Drive (24G0	554-03)   Matrix: V	Vater   Sampled: 20	24-07-03 13:	07, Continued		
General Parameters						
Alkalinity, Total (as CaCO3)	178	N/A	1.0	mg/L	2024-07-08	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A		mg/L	2024-07-08	
Alkalinity, Bicarbonate (as CaCO3)	178	N/A	1.0	-	2024-07-08	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0		2024-07-08	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A			2024-07-08	
Colour, True	< 5.0	AO ≤ 15	5.0	7.0.00	2024-07-06	
Conductivity (EC)	414	N/A		μS/cm	2024-07-08	
pH	7.42	7.0-10.5		pH units	2024-07-08	HT2
Solids, Total Dissolved	208	AO ≤ 500		mg/L	2024-07-09	
Temperature, at pH	20.9	N/A		°C	2024-07-08	HT2
Turbidity	0.12	OG < 1	0.10	NTU	2024-07-06	
Microbiological Parameters	0.12	00 1	0.10	IIIO	2024 07 00	
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-07-04	
Background Colonies	>200	N/A		CFU/100 mL	2024-07-04	
E. coli	< 1	MAC = 0	- 200	CFU/100 mL	2024-07-04	
Total Metals		WAG - 0		01 07 100 IIIL	2024-01-04	
Aluminum, total	< 0.0050	OG < 0.1	0.0050	ma/l	2024-07-10	
Antimony, total	< 0.00020	MAC = 0.006	0.00020		2024-07-10	
Arsenic, total		MAC = 0.000	0.00020		2024-07-10	
Barium, total	0.00051 0.0334	MAC = 0.01	0.0050		2024-07-10	
Beryllium, total	< 0.00010	N/A	0.00010		2024-07-10	
Bismuth, total	< 0.00010	N/A	0.00010	-	2024-07-10	
Boron, total	< 0.0500	MAC = 5	0.0500		2024-07-10	
Cadmium, total	< 0.000010	MAC = 0.007	0.000010		2024-07-10	
Chromium total	<b>57.4</b> < 0.00050	None Required		mg/L	2024-07-10	
Chromium, total	< 0.00030	MAC = 0.05 N/A	0.00050 0.00010	11 11 NO. 1 1	2024-07-10	
Cobalt, total  Copper, total		MAC = 2	0.00010		2024-07-10	
Iron, total	0.00179	NAC = 2 AO ≤ 0.3	0.00040		2024-07-10	
	0.013	MAC = 0.005	0.00020		2024-07-10	
Lead, total	0.00035	N/A			2024-07-10	
Lithium, total  Magnesium, total	0.00153	None Required	0.00010	mg/L	2024-07-10	
	16.7	MAC = 0.12	0.00020		2024-07-10	
Manganese, total  Mercury, total	<b>0.0228</b> < 0.000040	MAC = 0.001				LIC1
			0.000040		2024-07-10	HG1
Molybdenum, total  Nickel, total	0.00111	N/A N/A	0.00010		2024-07-10	
Phosphorus, total	0.00092		0.00040		2024-07-10	
	< 0.050	N/A		mg/L	2024-07-10	
Potassium, total	2.02	N/A		mg/L	2024-07-10	
Selenium, total	0.00172	MAC = 0.05	0.00050		2024-07-10	
Silicon, total	6.9	N/A		mg/L	2024-07-10	
Silver, total	< 0.000050	None Required	0.000050		2024-07-10	
Sodium, total	6.93	AO ≤ 200	0.10	mg/L	2024-07-10	Page 10



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Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
WT# 94E0 - Well 7 N. Fraser Drive (24G	0554-03)   Matrix: W	ater   Sampled: 20	)24-07-03 13:	07, Continue	d	
Total Metals, Continued						
Strontium, total	0.235	MAC = 7	0.0010	mg/L	2024-07-10	
Sulfur, total	7.2	N/A	3.0	mg/L	2024-07-10	
Tellurium, total	< 0.00050	N/A	0.00050	mg/L	2024-07-10	
Thallium, total	< 0.000020	N/A	0.000020	mg/L	2024-07-10	
Thorium, total	< 0.00010	N/A	0.00010	mg/L	2024-07-10	
Tin, total	< 0.00020	N/A	0.00020	mg/L	2024-07-10	
Titanium, total	< 0.0050	N/A	0.0050	mg/L	2024-07-10	
Tungsten, total	< 0.0010	N/A	0.0010	mg/L	2024-07-10	
Uranium, total	0.000923	MAC = 0.02	0.000020	mg/L	2024-07-10	
Vanadium, total	< 0.0050	N/A	0.0050	mg/L	2024-07-10	
Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2024-07-10	
Zirconium, total	< 0.00010	N/A	0.00010	mg/L	2024-07-10	
Volatile Organic Compounds (VOC)						
Benzene	< 0.5	MAC = 5	0.5	μg/L	2024-07-09	
Bromodichloromethane	< 1.0	N/A		μg/L	2024-07-09	
Bromoform	< 1.0	N/A	1.0		2024-07-09	
Carbon tetrachloride	< 0.5	MAC = 2	0.5		2024-07-09	
Chlorobenzene	< 1.0	AO ≤ 30	1.0		2024-07-09	
Chloroethane	< 2.0	N/A	2.0	1	2024-07-09	
Chloroform	< 1.0	N/A	1.0		2024-07-09	
Dibromochloromethane	< 1.0	N/A	1.0		2024-07-09	
1,2-Dibromoethane	< 0.3	N/A		μg/L	2024-07-09	
Dibromomethane	< 1.0	N/A	1.0	17. 2	2024-07-09	
1,2-Dichlorobenzene	< 0.5	AO ≤ 3	0.5		2024-07-09	
1,3-Dichlorobenzene	< 1.0	N/A	1.0		2024-07-09	
1.4-Dichlorobenzene	< 1.0	AO ≤ 1	1.0		2024-07-09	
1,1-Dichloroethane	< 1.0	N/A	1.0		2024-07-09	
1,2-Dichloroethane	< 1.0	MAC = 5	1.0	3.00	2024-07-09	
1,1-Dichloroethylene	< 1.0	MAC = 14	1.0	μg/L	2024-07-09	
cis-1,2-Dichloroethylene	< 1.0	N/A	1.0	µg/L	2024-07-09	
trans-1,2-Dichloroethylene	< 1.0	N/A		μg/L	2024-07-09	
Dichloromethane	< 3.0	MAC = 50		μg/L	2024-07-09	
1,2-Dichloropropane	< 1.0	N/A		μg/L	2024-07-09	
1,3-Dichloropropene (cis + trans)	< 1.0	N/A	1.0	μg/L	2024-07-09	
Ethylbenzene	< 1.0	AO ≤ 1.6		μg/L	2024-07-09	
Methyl tert-butyl ether	< 1.0	AO ≤ 15		μg/L	2024-07-09	
Styrene	< 1.0	N/A		μg/L	2024-07-09	
1,1,2,2-Tetrachloroethane	< 0.5	N/A		μg/L	2024-07-09	
Tetrachloroethylene	< 1.0	MAC = 10		μg/L	2024-07-09	
Toluene	< 1.0	MAC = 60		μg/L	2024-07-09	
1,1,1-Trichloroethane	< 1.0	N/A		μg/L	2024-07-09	
1,1,2-Trichloroethane	< 1.0	N/A		μg/L	2024-07-09	



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Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94E0 - Well 7 N. Fraser Drive (240	60554-03)   Matrix: W	ater   Sampled: 20	024-07-03 13:	07, Continue	ed	
Volatile Organic Compounds (VOC), Conti	nued					
Trichloroethylene	< 1.0	MAC = 5	1.0	μg/L	2024-07-09	
Trichlorofluoromethane	< 1.0	N/A		μg/L	2024-07-09	
Vinyl chloride	< 1.0	MAC = 2		μg/L	2024-07-09	
Xylenes (total)	< 2.0	AO ≤ 20		μg/L	2024-07-09	
Surrogate: Toluene-d8	80		70-130	%	2024-07-09	
Surrogate: 4-Bromofluorobenzene	73		70-130	%	2024-07-09	
Surrogate: 1,4-Dichlorobenzene-d4	86		70-130	%	2024-07-09	
WT# 94E1 - Well 8 Hillborn Road (24G0	0554-04)   Matrix: Wa	ter   Sampled: 202	24-07-03 11:2	7		
Chloride	5.11	AO ≤ 250	0.10	mg/L	2024-07-06	
Fluoride	< 0.10	MAC = 1.5		mg/L	2024-07-06	
Nitrate (as N)	< 0.010	MAC = 10	0.010		2024-07-06	
Nitrite (as N)	< 0.010	MAC = 1	0.010		2024-07-06	
Sulfate	42.1	AO ≤ 500		mg/L	2024-07-06	
Aggressiveness Index Hardness, Dissolved (as CaCO3)	12.1 201	N/A N/A	0.500	mg/L	2024-07-12 N/A	CT6
Hardness, Dissolved (as CaCO3)	201	N/A	0.500	mg/L	N/A	
Langelier Index	0.08	N/A	-5.0		2024-07-12	СТ6
Dissolved Metals						
Aluminum, dissolved	< 0.0050	N/A	0.0050	mg/L	2024-07-10	
Antimony, dissolved	< 0.00020	N/A	0.00020	mg/L	2024-07-10	
Arsenic, dissolved	0.00112	N/A	0.00050	mg/L	2024-07-10	
Barium, dissolved	0.121	N/A	0.0050	mg/L	2024-07-10	
Beryllium, dissolved	< 0.00010	N/A	0.00010	mg/L	2024-07-10	
Bismuth, dissolved	< 0.00010	N/A	0.00010	mg/L	2024-07-10	
Boron, dissolved	< 0.0500	N/A	0.0500	mg/L	2024-07-10	
Cadmium, dissolved	< 0.000010	N/A	0.000010	mg/L	2024-07-10	
Calcium, dissolved	60.5	N/A	0.20	mg/L	2024-07-10	
Chromium, dissolved	< 0.00050	N/A	0.00050		2024-07-10	
Cobalt, dissolved	< 0.00010	N/A	0.00010	mg/L	2024-07-10	
Copper, dissolved	0.00087	N/A	0.00040	mg/L	2024-07-10	
Iron, dissolved	< 0.010	N/A	0.010		2024-07-10	
	< 0.00020	N/A	0.00020	mg/L	2024-07-10	
Lead, dissolved	- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	2474	0.00010	mg/L	2024-07-10	
Lead, dissolved Lithium, dissolved	0.00069	N/A	0.00010	-		
		N/A N/A		mg/L	2024-07-10	
Lithium, dissolved	0.00069			mg/L	2024-07-10 2024-07-10	
Lithium, dissolved Magnesium, dissolved	0.00069 12.0	N/A	0.010	mg/L mg/L		HG1
Lithium, dissolved Magnesium, dissolved Manganese, dissolved	0.00069 12.0 0.246	N/A N/A	0.010 0.00020	mg/L mg/L mg/L	2024-07-10	HG1



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Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
WT# 94E1 - Well 8 Hillborn Road (24G05	54-04)   Matrix: Wa	ter   Sampled: 202	4-07-03 11:27	7, Continued		
Dissolved Metals, Continued						
Phosphorus, dissolved	< 0.050	N/A	0.050	mg/L	2024-07-10	
Potassium, dissolved	1.38	N/A	0.10	mg/L	2024-07-10	
Selenium, dissolved	< 0.00050	N/A	0.00050		2024-07-10	
Silicon, dissolved	6.2	N/A	1.0	mg/L	2024-07-10	
Silver, dissolved	< 0.000050	N/A	0.000050	mg/L	2024-07-10	
Sodium, dissolved	6.43	N/A	0.10	mg/L	2024-07-10	
Strontium, dissolved	0.390	N/A	0.0010	mg/L	2024-07-10	
Sulfur, dissolved	14.2	N/A	3.0	mg/L	2024-07-10	
Tellurium, dissolved	< 0.00050	N/A	0.00050	mg/L	2024-07-10	
Thallium, dissolved	< 0.000020	N/A	0.000020	mg/L	2024-07-10	
Thorium, dissolved	< 0.00010	N/A	0.00010	mg/L	2024-07-10	
Tin, dissolved	< 0.00020	N/A	0.00020	mg/L	2024-07-10	
Titanium, dissolved	< 0.0050	N/A	0.0050	mg/L	2024-07-10	
Tungsten, dissolved	< 0.0010	N/A	0.0010	mg/L	2024-07-10	
Uranium, dissolved	0.00141	N/A	0.000020	mg/L	2024-07-10	
Vanadium, dissolved	< 0.0050	N/A	0.0050	mg/L	2024-07-10	
Zinc, dissolved	< 0.0040	N/A	0.0040	mg/L	2024-07-10	
Zirconium, dissolved	< 0.00010	N/A	0.00010	mg/L	2024-07-10	
Alkalinity, Total (as CaCO3)  Alkalinity, Phenolphthalein (as CaCO3)	<b>162</b> < 1.0	N/A N/A		mg/L	2024-07-08 2024-07-08	
Alkalinity, Bicarbonate (as CaCO3)	162	N/A		mg/L	2024-07-08	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A		mg/L	2024-07-08	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A		mg/L	2024-07-08	
Colour, True	< 5.0	AO ≤ 15		CU	2024-07-06	
Conductivity (EC)	412	N/A		μS/cm	2024-07-08	
pH	7.68	7.0-10.5		pH units	2024-07-08	HT2
Solids, Total Dissolved	225	AO ≤ 500		mg/L	2024-07-09	
Temperature, at pH	21.4	N/A		°C	2024-07-08	HT2
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-07-06	
Microbiological Parameters	2 3 3 3 3 3 3					
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-07-04	
E. coli	< 1	MAC = 0		CFU/100 mL	2024-07-04	
Total Metals		WAG - 0		Of O/100 III.	2024 07 07	
	- 0.0050	00 -01	0.0050		2024 07 10	
Aluminum, total	< 0.0050	OG < 0.1	0.0050		2024-07-10	
Antimony, total	< 0.00020	MAC = 0.006	0.00020		2024-07-10	
Arsenic, total	0.00117	MAC = 0.01	0.00050		2024-07-10	
Barium, total	0.118	MAC = 2	0.0050		2024-07-10	
Beryllium, total	< 0.00010	N/A	0.00010		2024-07-10	-
Bismuth, total	< 0.00010	N/A	0.00010		2024-07-10	
Boron, total	< 0.0500	MAC = 5	0.0500	mg/L	2024-07-10	



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**PROJECT** Annual REPORTED

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
VT# 94E1 - Well 8 Hillborn Road (24G0	554-04)   Matrix: W	ater   Sampled: 202	4-07-03 11:2	7, Continue	d	
Total Metals, Continued						
Cadmium, total	< 0.000010	MAC = 0.007	0.000010	mg/L	2024-07-10	
Calcium, total	62.6	None Required	0.20	mg/L	2024-07-10	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2024-07-10	
Cobalt, total	< 0.00010	N/A	0.00010	mg/L	2024-07-10	
Copper, total	0.00043	MAC = 2	0.00040	mg/L	2024-07-10	
Iron, total	0.011	AO ≤ 0.3	0.010	mg/L	2024-07-10	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2024-07-10	
Lithium, total	0.00072	N/A	0.00010	mg/L	2024-07-10	
Magnesium, total	13.4	None Required	0.010	mg/L	2024-07-10	
Manganese, total	0.254	MAC = 0.12	0.00020	mg/L	2024-07-10	
Mercury, total	< 0.000040	MAC = 0.001	0.000040		2024-07-10	HG1
Molybdenum, total	0.00153	N/A	0.00010	mg/L	2024-07-10	
Nickel, total	0.00324	N/A	0.00040	mg/L	2024-07-10	
Phosphorus, total	< 0.050	N/A	0.050	mg/L	2024-07-10	
Potassium, total	1.45	N/A	0.10	mg/L	2024-07-10	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2024-07-10	
Silicon, total	6.9	N/A	1.0	mg/L	2024-07-10	
Silver, total	< 0.000050	None Required	0.000050	mg/L	2024-07-10	
Sodium, total	6.32	AO ≤ 200	0.10	mg/L	2024-07-10	
Strontium, total	0.366	MAC = 7	0.0010	mg/L	2024-07-10	
Sulfur, total	15.4	N/A	3.0	mg/L	2024-07-10	
Tellurium, total	< 0.00050	N/A	0.00050	mg/L	2024-07-10	
Thallium, total	< 0.000020	N/A	0.000020	mg/L	2024-07-10	
Thorium, total	< 0.00010	N/A	0.00010	mg/L	2024-07-10	
Tin, total	< 0.00020	N/A	0.00020	mg/L	2024-07-10	
Titanium, total	< 0.0050	N/A	0.0050	mg/L	2024-07-10	
Tungsten, total	< 0.0010	N/A	0.0010	mg/L	2024-07-10	
Uranium, total	0.00153	MAC = 0.02	0.000020	mg/L	2024-07-10	
Vanadium, total	< 0.0050	N/A	0.0050	mg/L	2024-07-10	
Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2024-07-10	
Zirconium, total	< 0.00010	N/A	0.00010	mg/L	2024-07-10	
/olatile Organic Compounds (VOC)						
Benzene	< 0.5	MAC = 5	0.5	μg/L	2024-07-09	
Bromodichloromethane	< 1.0	N/A	1.0	μg/L	2024-07-09	
Bromoform	< 1.0	N/A	1.0	μg/L	2024-07-09	
Carbon tetrachloride	< 0.5	MAC = 2	0.5	μg/L	2024-07-09	
Chlorobenzene	< 1.0	AO ≤ 30	1.0	μg/L	2024-07-09	
Chloroethane	< 2.0	N/A		μg/L	2024-07-09	
Chloroform	< 1.0	N/A		μg/L	2024-07-09	
Dibromochloromethane	< 1.0	N/A		μg/L	2024-07-09	
1,2-Dibromoethane	< 0.3	N/A		μg/L	2024-07-09	
Dibromomethane	< 1.0	N/A	1.0	μg/L	2024-07-09	



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PROJECT Annual				REPORTED	2024-07-12 16:08		
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie	
VT# 94E1 - Well 8 Hillborn Road (24G05	54-04)   Matrix: Wat	ter   Sampled: 2024	4-07-03 11:27	7, Continued			
/olatile Organic Compounds (VOC), Continu	ied						
1,2-Dichlorobenzene	< 0.5	AO ≤ 3	0.5	µg/L	2024-07-09		
1,3-Dichlorobenzene	< 1.0	N/A	1.0	µg/L	2024-07-09		
1,4-Dichlorobenzene	< 1.0	AO ≤ 1	1.0	μg/L	2024-07-09		
1,1-Dichloroethane	< 1.0	N/A	1.0	µg/L	2024-07-09		
1,2-Dichloroethane	< 1.0	MAC = 5	1.0	μg/L	2024-07-09		
1,1-Dichloroethylene	< 1.0	MAC = 14	1.0	µg/L	2024-07-09		
cis-1,2-Dichloroethylene	< 1.0	N/A	1.0	µg/L	2024-07-09		
trans-1,2-Dichloroethylene	< 1.0	N/A	1.0	µg/L	2024-07-09		
Dichloromethane	< 3.0	MAC = 50	3.0	μg/L	2024-07-09		
1,2-Dichloropropane	< 1.0	N/A		μg/L	2024-07-09		
1,3-Dichloropropene (cis + trans)	< 1.0	N/A	1.0	μg/L	2024-07-09		
Ethylbenzene	< 1.0	AO ≤ 1.6	1.0	μg/L	2024-07-09		
Methyl tert-butyl ether	< 1.0	AO ≤ 15		μg/L	2024-07-09		
Styrene	< 1.0	N/A		μg/L	2024-07-09		
1,1,2,2-Tetrachloroethane	< 0.5	N/A		μg/L	2024-07-09		
Tetrachloroethylene	< 1.0	MAC = 10		μg/L	2024-07-09		
Toluene	< 1.0	MAC = 60		μg/L	2024-07-09		
1,1,1-Trichloroethane	< 1.0	N/A		μg/L	2024-07-09		
1,1,2-Trichloroethane	< 1.0	N/A		μg/L	2024-07-09		
Trichloroethylene	< 1.0	MAC = 5		μg/L	2024-07-09		
Trichlorofluoromethane	< 1.0	N/A		μg/L	2024-07-09		
Vinyl chloride	< 1.0	MAC = 2	1.0	μg/L	2024-07-09		
Xylenes (total)	< 2.0	AO ≤ 20		µg/L	2024-07-09		
Surrogate: Toluene-d8	78		70-130		2024-07-09		
Surrogate: 4-Bromofluorobenzene	74		70-130	%	2024-07-09		
Surrogate: 1,4-Dichlorobenzene-d4	86		70-130	%	2024-07-09		
WT# 94DF - Well 9 Carson Sub (24G055	4-05)   Matrix: Wate	r   Sampled: 2024-	-07-03 13:40				
Chloride	3.56	AO ≤ 250	0.10	mg/L	2024-07-06		
Fluoride	< 0.10	MAC = 1.5		mg/L	2024-07-06		
- 1 3 3 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	< 0.010	MAC = 1.3		mg/L	2024-07-06		
Nitrate (as N)	< 0.010	MAC = 10		mg/L	2024-07-06		
Nitrite (as N)	19.5	AO ≤ 500		mg/L	2024-07-06		
Sulfate Sulfated Recompeters	19.5	AO 2 300	1.0	mg/L	2024-01-00		
Calculated Parameters					222/272_100	122	
Aggressiveness Index	11.2	N/A		-	2024-07-12	CT6	
Hardness, Dissolved (as CaCO3)	121	N/A		mg/L	N/A	12002.00	
Langelier Index	-0.8	N/A	-5.0		2024-07-12	CT6	
Dissolved Metals							
	< 0.0050	N/A		mg/L	2024-07-10		



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Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94DF - Well 9 Carson Sub (24G0554	I-05)   Matrix: Wate	r   Sampled: 2024	-07 <mark>-</mark> 03 13:40,	Continued		
Dissolved Metals, Continued						
Antimony, dissolved	< 0.00020	N/A	0.00020	mg/L	2024-07-10	
Arsenic, dissolved	0.00093	N/A	0.00050	mg/L	2024-07-10	
Barium, dissolved	0.0768	N/A	0.0050		2024-07-10	
Beryllium, dissolved	< 0.00010	N/A	0.00010		2024-07-10	
Bismuth, dissolved	< 0.00010	N/A	0.00010		2024-07-10	
Boron, dissolved	< 0.0500	N/A	0.0500	mg/L	2024-07-10	
Cadmium, dissolved	< 0.000010	N/A	0.000010		2024-07-10	
Calcium, dissolved	35.3	N/A		mg/L	2024-07-10	
Chromium, dissolved	< 0.00050	N/A	0.00050	-	2024-07-10	
Cobalt, dissolved	< 0.00010	N/A	0.00010		2024-07-10	
Copper, dissolved	0.00100	N/A	0.00040		2024-07-10	
Iron, dissolved	< 0.010	N/A	0.010	-	2024-07-10	
Lead, dissolved	< 0.00020	N/A	0.00020		2024-07-10	
Lithium, dissolved	0.00137	N/A	0.00010		2024-07-10	
Magnesium, dissolved	7.89	N/A	0.010		2024-07-10	
Manganese, dissolved	0.153	N/A	0.00020		2024-07-10	
Mercury, dissolved	< 0.000040	N/A	0.000040		2024-07-10	HG1
Molybdenum, dissolved	0.00161	N/A	0.00010		2024-07-10	
Nickel, dissolved	< 0.00040	N/A	0.00040		2024-07-10	
Phosphorus, dissolved	< 0.050	N/A	0.050		2024-07-10	
Potassium, dissolved	0.91	N/A		mg/L	2024-07-10	
Selenium, dissolved	< 0.00050	N/A	0.00050		2024-07-10	
Silicon, dissolved	6.1	N/A		mg/L	2024-07-10	
Silver, dissolved	< 0.000050	N/A	0.000050		2024-07-10	
Sodium, dissolved	4.68	N/A		mg/L	2024-07-10	
Strontium, dissolved	0.201	N/A	0.0010		2024-07-10	
Sulfur, dissolved	6.7	N/A		mg/L	2024-07-10	
Tellurium, dissolved	< 0.00050	N/A	0.00050	-	2024-07-10	
Thallium, dissolved	< 0.000020	N/A	0.000020		2024-07-10	
Thorium, dissolved	< 0.00010	N/A	0.000020		2024-07-10	
Tin, dissolved	< 0.00010	N/A	0.00010	-	2024-07-10	
Titanium, dissolved	< 0.0050	N/A	0.0050		2024-07-10	
Tungsten, dissolved	< 0.0030	N/A	0.0030		2024-07-10	
Uranium, dissolved	0.000368	N/A	0.000020		2024-07-10	
Vanadium, dissolved	< 0.0050	N/A	0.000020		2024-07-10	-
Zinc, dissolved	< 0.0040	N/A	0.0030	_/ <u> </u>	2024-07-10	
Ziric, dissolved Zirconium, dissolved	< 0.0040	N/A	0.0040		2024-07-10	
. V N L 20 1 2 2 2 4 2	~ 0.00010	IN/A	0.00010	mg/L	2024-07-10	
General Parameters						
Alkalinity, Total (as CaCO3)	107	N/A	1.0	mg/L	2024-07-08	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0	mg/L	2024-07-08	
Alkalinity, Bicarbonate (as CaCO3)	107	N/A	1.0	mg/L	2024-07-08	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0	mg/L	2024-07-08	



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Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94DF - Well 9 Carson Sub (24G0	554-05)   Matrix: Wate	er   Sampled: 2024-	07-03 13:40,	Continued		
General Parameters, Continued						
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0	mg/L	2024-07-08	
Colour, True	< 5.0	AO ≤ 15	5.0	CU	2024-07-06	
Conductivity (EC)	257	N/A	2.0	μS/cm	2024-07-08	
pH	7.24	7.0-10.5	0.10	pH units	2024-07-08	HT2
Solids, Total Dissolved	122	AO ≤ 500	15	mg/L	2024-07-09	
Temperature, at pH	21.2	N/A		°C	2024-07-08	HT2
Turbidity	0.11	OG < 1	0.10	NTU	2024-07-06	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-07-04	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-07-04	
Total Metals						
Aluminum, total	< 0.0050	OG < 0.1	0.0050	ma/l	2024-07-10	
Antimony, total	< 0.00020	MAC = 0.006	0.00020		2024-07-10	
Arsenic, total	0.0002	MAC = 0.01	0.00050	-	2024-07-10	
Barium, total	0.0755	MAC = 2	0.0050		2024-07-10	
Beryllium, total	< 0.00010	N/A	0.00010		2024-07-10	
Bismuth, total	< 0.00010	N/A	0.00010	-	2024-07-10	
Boron, total	< 0.0500	MAC = 5	0.0500		2024-07-10	
Cadmium, total	< 0.000010	MAC = 0.007	0.000010		2024-07-10	
Calcium, total	36.8	None Required		mg/L	2024-07-10	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	-	2024-07-10	
Cobalt, total	< 0.00010	N/A	0.00010		2024-07-10	
Copper, total	0.00050	MAC = 2	0.00040		2024-07-10	
Iron, total	< 0.010	AO ≤ 0.3		mg/L	2024-07-10	
Lead, total	0.00032	MAC = 0.005	0.00020		2024-07-10	
Lithium, total	0.00149	N/A	0.00010		2024-07-10	
Magnesium, total	8.67	None Required	0.010	mg/L	2024-07-10	
Manganese, total	0.156	MAC = 0.12	0.00020	mg/L	2024-07-10	
Mercury, total	< 0.000040	MAC = 0.001	0.000040	mg/L	2024-07-10	HG1
Molybdenum, total	0.00165	N/A	0.00010	mg/L	2024-07-10	
Nickel, total	< 0.00040	N/A	0.00040	mg/L	2024-07-10	
Phosphorus, total	< 0.050	N/A	0.050	mg/L	2024-07-10	
Potassium, total	0.95	N/A	0.10	mg/L	2024-07-10	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2024-07-10	
Silicon, total	6.6	N/A	1.0	mg/L	2024-07-10	
Silver, total	< 0.000050	None Required	0.000050	100	2024-07-10	
Sodium, total	4.57	AO ≤ 200		mg/L	2024-07-10	
Strontium, total	0.205	MAC = 7	0.0010	mg/L	2024-07-10	
Sulfur, total	7.2	N/A	3.0	mg/L	2024-07-10	
Tellurium, total	< 0.00050	N/A	0.00050	mg/L	2024-07-10	
Thallium, total	< 0.000020	N/A	0.000020	mg/L	2024-07-10	
Thorium, total	< 0.00010	N/A	0.00010	mg/L	2024-07-10	age 17



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T# 94DF - Well 9 Carson Sub (24G0554-05)   Matrix: Water   Sampled: 2024-07-03 13:40, Continued           Cotal Metals, Continued           Tina, Iotal         < 0.00020         N/A         0.0000 mg/L         2024-07-10           Tinanium, total         < 0.00010         N/A         0.0000 mg/L         2024-07-10           Tungsten, Iotal         < 0.00000         N/A         0.0000 mg/L         2024-07-10           Vanadium, total         < 0.00000         N/A         0.0000 mg/L         2024-07-10           Vanadium, total         < 0.00000         N/A         0.0000 mg/L         2024-07-10           Vanadium, total         < 0.00010         N/A         0.0000 mg/L         2024-07-10           Zinc, total         < 0.00010         N/A         0.00010         mg/L         2024-07-10           Parcenium, total         < 0.00010         N/A         0.00010         mg/L         2024-07-10           Zinc, total         < 0.00010         N/A         0.00010         mg/L         2024-07-10           Separation text and total colorida         < 0.5         MAC = 5         0.5         µg/L         2024-07-09           Bromodichicomethane         < 1.0         N/A         1.0         µg/L         2024-07-09	PROJECT Annual				REPORTED	2024-07-12 16:08	
Tin, total	Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
Tin, total         < 0.00020         NNA         0.00020         mg/L         2024-07-10           Titanium, total         < 0.0050	NT# 94DF - Well 9 Carson Sub (24G05	54-05)   Matrix: Wate	er   Sampled: 2024	-07-03 13:40,	Continued		
Titanium, total         < 0.0050         N/A         0.0050         mg/L         2024-07-10           Tungsten, total         < 0.0010	Total Metals, Continued						
Tungsten, total         < 0.0010         N/A         0.0010         mg/L         2024-07-10           Uranium, total         0.000385         MAC         0.0050         mg/L         2024-07-10           Zinc, total         < 0.0000	Tin, total	< 0.00020	N/A	0.00020	mg/L	2024-07-10	
Uranium, total         0.000385         MAC = 0.02         0.00000         mg/L         2024-07-10           Vanadium, total         <0.0050	Titanium, total	< 0.0050	N/A	0.0050	mg/L	2024-07-10	
Vanadium, total         < 0.0050         N/A         0.0050         mg/L         2024-07-10           Zinc, total         < 0.0040	Tungsten, total	< 0.0010	N/A	0.0010	mg/L	2024-07-10	
Zinco, total   <0.0040	Uranium, total	0.000385	MAC = 0.02	0.000020	mg/L	2024-07-10	
Zirconium, total   Compounds (VOC)   N/A   0.00010 mg/L   2024-07-10	Vanadium, total	< 0.0050	N/A	0.0050	mg/L	2024-07-10	
September   Color   Compounds (VOC)   Benzene   Color   MAC = 5   0.5   MAC   2024-07-09   Bromodichloromethane   Color   N/A   1.0   MAC   2024-07-09   Bromodichloromethane   Color   N/A   1.0   MAC   2024-07-09   Carbon tetrachloride   Color   MAC   20.5   MAC	Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2024-07-10	
Benzene         < 0.5         MAC = 5         0.5         lg/L         2024-07-09           Bromodichloromethane         < 1.0	Zirconium, total	< 0.00010	N/A	0.00010	mg/L	2024-07-10	
Bromodichloromethane         < 1.0         N/A         1.0         µg/L         2024-07-09           Bromoform         < 1.0	/olatile Organic Compounds (VOC)						
Bromodichloromethane         < 1.0         N/A         1.0         µg/L         2024-07-09           Bromoform         < 1.0	Benzene	< 0.5	MAC = 5	0.5	µg/L	2024-07-09	
Bromoform         < 1.0         N/A         1.0         pg/L         2024-07-09           Carbon tetrachloride         < 0.5	Bromodichloromethane	< 1.0	N/A			2.7.4.4.1.6.5.6.0	
Carbon tetrachloride         < 0.5         MAC = 2         0.5         µg/L         2024-07-09           Chlorobenzene         < 1.0	Bromoform	< 1.0	N/A			2024-07-09	
Chlorobenzene         < 1.0         AO ≤ 30         1.0         μg/L         2024-07-09           Chloroethane         < 2.0	Carbon tetrachloride						
Chloroethane         < 2.0         N/A         2.0         µg/L         2024-07-09           Chloroform         < 1.0			-10-10-10-10-10-10-10-10-10-10-10-10-10-				
Chloroform         < 1.0         N/A         1.0         μg/L         2024-07-09           Dibromochloromethane         < 1.0	1 (V 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	917451	100.00			- C V 32 V 1 V 2 V 1	
Dibromochloromethane         < 1.0         N/A         1.0         µg/L         2024-07-09           1,2-Dibromoethane         < 0.3	Chloroform						
1,2-Dibromoethane         < 0.3							
Dibromomethane         < 1.0         N/A         1.0         μg/L         2024-07-09           1,2-Dichlorobenzene         < 0.5							
1,2-Dichlorobenzene         < 0.5	The Man was already to a man full strain.						
1,3-Dichlorobenzene       <1.0							
1,4-Dichlorobenzene       < 1.0						AND A SECURE OF THE PARK.	
1,1-Dichloroethane       < 1.0	ALCOHOL VIV. 17 CO. C.					200 200 200 200 200	
1,2-Dichloroethane       < 1.0	Control of the contro						
1,1-Dichloroethylene       < 1.0       MAC = 14       1.0       µg/L       2024-07-09         cis-1,2-Dichloroethylene       < 1.0							
cis-1,2-Dichloroethylene < 1.0 N/A 1.0 $\mu g/L$ 2024-07-09 trans-1,2-Dichloroethylene < 1.0 N/A 1.0 $\mu g/L$ 2024-07-09 trans-1,2-Dichloroethylene < 1.0 N/A 1.0 $\mu g/L$ 2024-07-09 Dichloromethane < 3.0 MAC = 50 3.0 $\mu g/L$ 2024-07-09 1,2-Dichloropropane < 1.0 N/A 1.0 $\mu g/L$ 2024-07-09 1,3-Dichloropropane (cis + trans) < 1.0 N/A 1.0 $\mu g/L$ 2024-07-09 1,3-Dichloropropene (cis + trans) < 1.0 N/A 1.0 $\mu g/L$ 2024-07-09 1,3-Dichloropropene (cis + trans) < 1.0 N/A 1.0 $\mu g/L$ 2024-07-09 1,3-Dichloropropene (cis + trans) < 1.0 N/A 1.0 $\mu g/L$ 2024-07-09 1,3-Dichloropropene (cis + trans) < 1.0 N/A 1.0 $\mu g/L$ 2024-07-09 1,1,2,2-Tetrachloroethane < 1.0 N/A 1.0 $\mu g/L$ 2024-07-09 1,1,2,2-Tetrachloroethane < 1.0 MAC = 10 1.0 $\mu g/L$ 2024-07-09 1,1,2,2-Tetrachloroethylene < 1.0 MAC = 60 1.0 $\mu g/L$ 2024-07-09 1,1,1-Trichloroethane < 1.0 N/A 1.0 $\mu g/L$ 2024-07-09 1,1,1-Trichloroethane < 1.0 N/A 1.0 $\mu g/L$ 2024-07-09 1,1,2-Trichloroethane < 1.0 N/A 1.0 $\mu g/L$ 2024-07-09 1,1,2-Trichloroethylene < 1.0 N/A 1.0 $\mu g/L$ 2024-07-09 1						The second secon	
trans-1,2-Dichloroethylene         < 1.0         N/A         1.0         µg/L         2024-07-09           Dichloromethane         < 3.0		1 1 1 1 1 1				71.1 TV 1 1271 011	
Dichloromethane         < 3.0         MAC = 50         3.0         μg/L         2024-07-09           1,2-Dichloropropane         < 1.0							
1,2-Dichloropropane       < 1.0       N/A       1.0 $\mu g/L$ 2024-07-09         1,3-Dichloropropene (cis + trans)       < 1.0							
1,3-Dichloropropene (cis + trans)       < 1.0       N/A       1.0 $\mu g/L$ 2024-07-09         Ethylbenzene       < 1.0			11 2000			VER-2000 1000 7000	
Ethylbenzene < 1.0 AO ≤ 1.6 1.0 μg/L 2024-07-09 Methyl tert-butyl ether < 1.0 AO ≤ 15 1.0 μg/L 2024-07-09 Styrene < 1.0 N/A 1.0 μg/L 2024-07-09 1,1,2,2-Tetrachloroethane < 0.5 N/A 0.5 μg/L 2024-07-09 Tetrachloroethylene < 1.0 MAC = 10 1.0 μg/L 2024-07-09 Toluene < 1.0 MAC = 60 1.0 μg/L 2024-07-09 1,1,1-Trichloroethane < 1.0 N/A 1.0 μg/L 2024-07-09 1,1,1-Trichloroethane < 1.0 N/A 1.0 μg/L 2024-07-09 1,1,2-Trichloroethane < 1.0 N/A 1.0 μg/L 2024-07-09 Trichloroethylene < 1.0 N/A 1.0 μg/L 2024-07-09 1,1,2-Trichloroethylene < 1.0 N/A 1.0 μg/L 2024-07-09 Trichloroethylene < 1.0 MAC = 5 1.0 μg/L 2024-07-09 Trichlorofluoromethane < 1.0 N/A 1.0 μg/L 2024-07-09 Trichlorofluoromethane < 1.0 MAC = 2 1.0 μg/L 2024-07-09 Vinyl chloride < 1.0 MAC = 2 1.0 μg/L 2024-07-09 Xylenes (total) < 2.0 AO ≤ 20 2.0 μg/L 2024-07-09							
Methyl tert-butyl ether       < 1.0       AO ≤ 15       1.0       μg/L       2024-07-09         Styrene       < 1.0	74073 100000 10000000000000000000000000000						
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$							
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	The State of the Association of the State of						
Tetrachloroethylene         < 1.0         MAC = 10         1.0         μg/L         2024-07-09           Toluene         < 1.0	C 100 P 10						
Toluene < 1.0 MAC = 60 1.0 μg/L 2024-07-09 1,1,1-Trichloroethane < 1.0 N/A 1.0 μg/L 2024-07-09 1,1,2-Trichloroethane < 1.0 N/A 1.0 μg/L 2024-07-09 1,1,2-Trichloroethane < 1.0 N/A 1.0 μg/L 2024-07-09 1 1,1,2-Trichloroethylene < 1.0 MAC = 5 1.0 μg/L 2024-07-09 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1							
$\begin{array}{cccccccccccccccccccccccccccccccccccc$							
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1917(2) 3.77(4)						
Trichloroethylene         < 1.0         MAC = 5         1.0         μg/L         2024-07-09           Trichlorofluoromethane         < 1.0							
Trichlorofluoromethane         < 1.0         N/A         1.0         μg/L         2024-07-09           Vinyl chloride         < 1.0							
Vinyl chloride       < 1.0       MAC = 2       1.0       μg/L       2024-07-09         Xylenes (total)       < 2.0						- 1.1.1.1.XX-1.1.Z-	
Xylenes (total) < 2.0 AO ≤ 20 2.0 μg/L 2024-07-09	STORY CONTROL OF THE STORY OF T						
						100000000000000000000000000000000000000	
	Surrogate: Toluene-d8	77	AU = 20			2024-07-09	



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24G0554

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PROJECT Annual				REPORTED	2024-07-1	2 16:08
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94DF - Well 9 Carson Sub (24G055	54-05)   Matrix: Wate	r   Sampled: 2024	-07-03 13:40,	Continued		
Volatile Organic Compounds (VOC), Contin	nued					
Surrogate: 4-Bromofluorobenzene	78		70-130	%	2024-07-09	
Surrogate: 1,4-Dichlorobenzene-d4	90		70-130	%	2024-07-09	
WT# 28000 - Well 10 Hillborn Road (240	30554-06)   Matrix: V	Vater   Sampled: 2	2024-07-03 11	:05		
Anions						
Chloride	15.4	AO ≤ 250	0.10	mg/L	2024-07-06	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	2024-07-06	
Nitrate (as N)	< 0.010	MAC = 10	0.010	mg/L	2024-07-06	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2024-07-06	
Sulfate	81.7	AO ≤ 500	1.0	mg/L	2024-07-06	
Calculated Parameters						
Aggressiveness Index	12.7	N/A		-	2024-07-12	CT6
Hardness, Dissolved (as CaCO3)	344	N/A	0.500	mg/L	N/A	
Langelier Index	0.7	N/A	-5.0		2024-07-12	CT6
Dissolved Metals						
Aluminum, dissolved	< 0.0050	N/A	0.0050	mg/L	2024-07-09	
Antimony, dissolved	< 0.00020	N/A	0.00020		2024-07-09	
Arsenic, dissolved	0.00128	N/A	0.00050		2024-07-09	
Barium, dissolved	0.221	N/A	0.0050	mg/L	2024-07-09	
Beryllium, dissolved	< 0.00010	N/A	0.00010		2024-07-09	
Bismuth, dissolved	< 0.00010	N/A	0.00010		2024-07-09	
Boron, dissolved	< 0.0500	N/A	0.0500	mg/L	2024-07-09	
Cadmium, dissolved	0.000035	N/A	0.000010	mg/L	2024-07-09	
Calcium, dissolved	96.0	N/A	0.20	mg/L	2024-07-09	
Chromium, dissolved	< 0.00050	N/A	0.00050	mg/L	2024-07-09	
Cobalt, dissolved	< 0.00010	N/A	0.00010	mg/L	2024-07-09	
Copper, dissolved	0.00392	N/A	0.00040	mg/L	2024-07-09	
Iron, dissolved	< 0.010	N/A	0.010	mg/L	2024-07-09	
Lead, dissolved	< 0.00020	N/A	0.00020	mg/L	2024-07-09	
Lithium, dissolved	0.00111	N/A	0.00010	mg/L	2024-07-09	
Magnesium, dissolved	25.3	N/A	0.010	mg/L	2024-07-09	
Manganese, dissolved	0.598	N/A	0.00020	mg/L	2024-07-09	
Mercury, dissolved	< 0.000040	N/A	0.000040	mg/L	2024-07-11	HG1
Molybdenum, dissolved	0.00111	N/A	0.00010	mg/L	2024-07-09	
Nickel, dissolved	0.00558	N/A	0.00040	mg/L	2024-07-09	
Phosphorus, dissolved	< 0.050	N/A	0.050	mg/L	2024-07-09	
Potassium, dissolved	2.22	N/A	0.10	mg/L	2024-07-09	
Selenium, dissolved	< 0.00050	N/A	0.00050	mg/L	2024-07-09	
Silicon, dissolved	7.9	N/A	1.0	mg/L	2024-07-09	
Silver, dissolved	< 0.000050	N/A	0.000050	mg/L	2024-07-09	



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Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 28000 - Well 10 Hillborn Road (24G0	554-06)   Matrix:	Water   Sampled: 20	024-07-03 11	:05, Continued		
Dissolved Metals, Continued						
Sodium, dissolved	17.2	N/A	0.10	mg/L	2024-07-09	
Strontium, dissolved	0.626	N/A	0.0010	mg/L	2024-07-09	
Sulfur, dissolved	30.2	N/A	3.0	mg/L	2024-07-09	
Tellurium, dissolved	< 0.00050	N/A	0.00050	mg/L	2024-07-09	
Thallium, dissolved	< 0.000020	N/A	0.000020	mg/L	2024-07-09	
Thorium, dissolved	< 0.00010	N/A	0.00010	mg/L	2024-07-09	
Tin, dissolved	< 0.00020	N/A	0.00020	mg/L	2024-07-09	
Titanium, dissolved	< 0.0050	N/A	0.0050	mg/L	2024-07-09	
Tungsten, dissolved	< 0.0010	N/A	0.0010	mg/L	2024-07-09	
Uranium, dissolved	0.00262	N/A	0.000020	mg/L	2024-07-09	
Vanadium, dissolved	< 0.0050	N/A	0.0050	mg/L	2024-07-09	
Zinc, dissolved	0.0081	N/A	0.0040	mg/L	2024-07-09	
Zirconium, dissolved	< 0.00010	N/A	0.00010	mg/L	2024-07-09	
General Parameters						
Alkalinity, Total (as CaCO3)	258	N/A	1.0	mg/L	2024-07-08	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A		mg/L	2024-07-08	
Alkalinity, Bicarbonate (as CaCO3)	258	N/A		mg/L	2024-07-08	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A		mg/L	2024-07-08	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0	mg/L	2024-07-08	
Colour, True	< 5.0	AO ≤ 15	5.0	CU	2024-07-06	
Conductivity (EC)	693	N/A	2.0	μS/cm	2024-07-08	
рН	7.89	7.0-10.5	0.10	pH units	2024-07-08	HT2
Solids, Total Dissolved	394	AO ≤ 500	15	mg/L	2024-07-09	
Temperature, at pH	21.5	N/A		°C	2024-07-08	HT2
Turbidity	< 0.10	OG < 1	0.10	NTU	2024-07-06	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-07-04	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-07-04	
Total Metals						
Aluminum, total	< 0.0050	OG < 0.1	0.0050	mg/L	2024-07-10	
Antimony, total	< 0.00020	MAC = 0.006	0.00020		2024-07-10	
Arsenic, total	0.00127	MAC = 0.01	0.00050		2024-07-10	
Barium, total	0.215	MAC = 2	0.0050		2024-07-10	
Beryllium, total	< 0.00010	N/A	0.00010		2024-07-10	
Bismuth, total	< 0.00010	N/A	0.00010		2024-07-10	
Boron, total	< 0.0500	MAC = 5	0.0500		2024-07-10	
Cadmium, total	0.000033	MAC = 0.007	0.000010		2024-07-10	
Calcium, total	96.7	None Required		mg/L	2024-07-10	
Chromium, total	< 0.00050	MAC = 0.05	0.00050		2024-07-10	
Cobalt, total	< 0.00010	N/A	0.00010		2024-07-10	
Copper, total	0.00353	MAC = 2	0.00040		2024-07-10	



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Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
VT# 28000 - Well 10 Hillborn Road (2	4G0554-06)   Matrix: '	Water   Sampled: 20	024-07-03 11	:05, Continue	ed	
otal Metals, Continued						
Iron, total	< 0.010	AO ≤ 0.3	0.010	mg/L	2024-07-10	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2024-07-10	
Lithium, total	0.00114	N/A	0.00010	mg/L	2024-07-10	
Magnesium, total	26.9	None Required	0.010	mg/L	2024-07-10	
Manganese, total	0.558	MAC = 0.12	0.00020	mg/L	2024-07-10	
Mercury, total	< 0.000040	MAC = 0.001	0.000040	mg/L	2024-07-10	HG1
Molybdenum, total	0.00118	N/A	0.00010	mg/L	2024-07-10	
Nickel, total	0.00564	N/A	0.00040	mg/L	2024-07-10	
Phosphorus, total	< 0.050	N/A	0.050	mg/L	2024-07-10	
Potassium, total	2.22	N/A	0.10	mg/L	2024-07-10	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2024-07-10	
Silicon, total	8.3	N/A	1.0	mg/L	2024-07-10	
Silver, total	< 0.000050	None Required	0.000050	mg/L	2024-07-10	
Sodium, total	17.2	AO ≤ 200	0.10	mg/L	2024-07-10	
Strontium, total	0.584	MAC = 7	0.0010	mg/L	2024-07-10	
Sulfur, total	31.3	N/A	3.0	mg/L	2024-07-10	
Tellurium, total	< 0.00050	N/A	0.00050	mg/L	2024-07-10	
Thallium, total	< 0.000020	N/A	0.000020	mg/L	2024-07-10	
Thorium, total	< 0.00010	N/A	0.00010	mg/L	2024-07-10	
Tin, total	< 0.00020	N/A	0.00020	mg/L	2024-07-10	
Titanium, total	< 0.0050	N/A	0.0050	mg/L	2024-07-10	
Tungsten, total	< 0.0010	N/A	0.0010	mg/L	2024-07-10	
Uranium, total	0.00294	MAC = 0.02	0.000020	mg/L	2024-07-10	
Vanadium, total	< 0.0050	N/A	0.0050	mg/L	2024-07-10	
Zinc, total	0.0084	AO ≤ 5	0.0040	mg/L	2024-07-10	
Zirconium, total	< 0.00010	N/A	0.00010	mg/L	2024-07-10	
Volatile Organic Compounds (VOC)						
Benzene	< 0.5	MAC = 5	0.5	µg/L	2024-07-09	
Bromodichloromethane	< 1.0	N/A	1.0	μg/L	2024-07-09	
Bromoform	< 1.0	N/A	1.0	µg/L	2024-07-09	
Carbon tetrachloride	< 0.5	MAC = 2	0.5	μg/L	2024-07-09	
Chlorobenzene	< 1.0	AO ≤ 30	1.0	μg/L	2024-07-09	
Chloroethane	< 2.0	N/A	2.0	μg/L	2024-07-09	
Chloroform	< 1.0	N/A	1.0	μg/L	2024-07-09	
Dibromochloromethane	< 1.0	N/A	1.0	μg/L	2024-07-09	
1,2-Dibromoethane	< 0.3	N/A	0.3	μg/L	2024-07-09	
Dibromomethane	< 1.0	N/A	1.0	μg/L	2024-07-09	
1,2-Dichlorobenzene	< 0.5	AO ≤ 3		μg/L	2024-07-09	
1,3-Dichlorobenzene	< 1.0	N/A		μg/L	2024-07-09	
1,4-Dichlorobenzene	< 1.0	AO ≤ 1		μg/L	2024-07-09	
1,1-Dichloroethane	< 1.0	N/A		μg/L	2024-07-09	
1,2-Dichloroethane	< 1.0	MAC = 5		μg/L	2024-07-09	



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Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
NT# 28000 - Well 10 Hillborn Road (24G	0554-06)   Matrix: V	Vater   Sampled: 2	024-07-03 11	:05, Continu	ied	
/olatile Organic Compounds (VOC), Continu	ıed					
1,1-Dichloroethylene	< 1.0	MAC = 14	1.0	μg/L	2024-07-09	
cis-1,2-Dichloroethylene	< 1.0	N/A	1.0	μg/L	2024-07-09	
trans-1,2-Dichloroethylene	< 1.0	N/A	1.0	μg/L	2024-07-09	
Dichloromethane	< 3.0	MAC = 50	3.0	μg/L	2024-07-09	
1,2-Dichloropropane	< 1.0	N/A	1.0	μg/L	2024-07-09	
1,3-Dichloropropene (cis + trans)	< 1.0	N/A	1.0	μg/L	2024-07-09	
Ethylbenzene	< 1.0	AO ≤ 1.6	1.0	μg/L	2024-07-09	
Methyl tert-butyl ether	< 1.0	AO ≤ 15	1.0	μg/L	2024-07-09	
Styrene	< 1.0	N/A	1.0	µg/L	2024-07-09	
1,1,2,2-Tetrachloroethane	< 0.5	N/A	0.5	μg/L	2024-07-09	
Tetrachloroethylene	< 1.0	MAC = 10	1.0	µg/L	2024-07-09	
Toluene	< 1.0	MAC = 60	1.0	μg/L	2024-07-09	
1,1,1-Trichloroethane	< 1.0	N/A	1.0	μg/L	2024-07-09	
1,1,2-Trichloroethane	< 1.0	N/A	1.0	μg/L	2024-07-09	
Trichloroethylene	< 1.0	MAC = 5	1.0	μg/L	2024-07-09	
Trichlorofluoromethane	< 1.0	N/A	1.0	μg/L	2024-07-09	
Vinyl chloride	< 1.0	MAC = 2	1.0	μg/L	2024-07-09	
Xylenes (total)	< 2.0	AO ≤ 20	2.0	μg/L	2024-07-09	
Surrogate: Toluene-d8	79		70-130	%	2024-07-09	
Surrogate: 4-Bromofluorobenzene	79		70-130	%	2024-07-09	
Surrogate: 1,4-Dichlorobenzene-d4	93		70-130	%	2024-07-09	

#### Sample Qualifiers:

CT6 Results were based on lab temperature & lab pH.

HG1 Sample bottle and preservation submitted is not suitable for Mercury analysis and analyte stability may be affected.

HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.



### APPENDIX 1: SUPPORTING INFORMATION

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Analysis Description	Method Ref.	Technique	Accredited	Location
Alkalinity in Water	SM 2320 B* (2021)	Titration with H2SO4	1	Kelowna
Anions in Water	SM 4110 B (2020)	Ion Chromatography	1	Kelowna
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	/	Kelowna
Colour, True in Water	SM 2120 C (2021)	Spectrophotometry (456 nm)	1	Kelowna
Conductivity in Water	SM 2510 B (2021)	Conductivity Meter	1	Kelowna
Dissolved Metals in Water	EPA 200.8 / EPA 6020B	0.45 µm Filtration / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Hardness in Water	SM 2340 B (2021)	Calculation: 2.497 [diss Ca] + 4.118 [diss Mg]	1	N/A
Langelier Index in Water	SM 2330 B (2021)	Calculation		N/A
pH in Water	SM 4500-H+ B (2021)	Electrometry	1	Kelowna
Solids, Total Dissolved in Water	Solids in Water, Filtered / SM 2540 C* (2020)	Solids in Water, Filtered / Gravimetry (Dried at 103-105C)	1	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCI Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	1	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	✓	Kelowna
Volatile Organic Compounds in Water	EPA 5030B / EPA 8260D	Purge&Trap / GC-MSD (SIM)	1	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

#### Glossary of Terms:

RL Reporting Limit (default)

< Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

>2 Greater than the specified Result

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres

CU Colour Units (referenced against a platinum cobalt standard)

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

NTU Nephelometric Turbidity Units
OG Operational Guideline (treated water)
pH units pH < 7 = acidic, ph > 7 = basic

μg/L Micrograms per litre

μS/cm Microsiemens per centimetre

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association





#### APPENDIX 1: SUPPORTING INFORMATION

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Quesnel, City of

PROJECT Annual WORK ORDER

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24G0554

2024-07-12 16:08

#### General Comments:

The results in this report apply to the received samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Caro will dispose of all samples within 30 days of sample receipt, unless otherwise agreed. The quality control (QC) data is available upon request

Results in Bold indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted red. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do not take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager:bwhitehead@caro.ca

Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline (s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability or responsibility for any loss attributed from the use of these guidelines in any way.



### **CERTIFICATE OF ANALYSIS**

REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

ATTENTION

Joe Law

PO NUMBER

**PROJECT** 

Monthly Wells

PROJECT INFO

WORK ORDER

**COC NUMBER** 

24A1772

RECEIVED / TEMP REPORTED 2024-01-19 09:30 / 5.8°C

2024-01-25 09:53

No Number

#### Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks



We've Got Chemistry



Ahead of the Curve



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: https://www.caro.ca/terms-conditions

If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead Account Manager M what

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REPORTED TO PROJECT	Quesnel, City of Monthly Wells				WORK ORDER REPORTED	24A1772 2024-01-2	25 09:53
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94D1 - Well 3	3 Rolph at Roddis (24A1	772-01)   Matrix: \	Water   Sampled: 2	024-01-17 09	:30	2	
Field Parameters							
Temperature, field		9.8	AO ≤ 15		°C	2024-01-17	
Microbiological Par	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-01-19	НТ3
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-01-19	НТ3
Total Metals							
Manganese, total		0.436	MAC = 0.12	0.00020	mg/L	2024-01-22	
WT# 94DC - Well	6 Rolph at Robertson (2	4A1772-02)   Matr	ix: Water   Sample	d: 2024-01-1	7 10:20		
Field Parameters							
Temperature, field		9.7	AO ≤ 15		°C	2024-01-17	
Microbiological Par	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-01-19	НТ3
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-01-19	НТ3
Total Metals							
Manganese, total		0.284	MAC = 0.12	0.00020	mg/L	2024-01-22	
WT# 94E0 - Well 7	7 N. Fraser Drive (24A17	72-03)   Matrix: W	ater   Sampled: 20	24-01-17 11:0	00		
Temperature, field		8.9	AO ≤ 15		°C	2024-01-07	
Microbiological Par	A COA COA	0.3	7.0 = 10		<u> </u>	202 T-0 1-07	
Coliforms, Total	ameter 3	< 1	MAC = 0	1	CFU/100 mL	2024-01-19	НТ3
E. coli		< 1	MAC = 0		CFU/100 mL	2024-01-19	HT3
Total Metals							
Manganese, total		0.0125	MAC = 0.12	0.00020	mg/L	2024-01-22	
	8 Hilborn Road (24A1772						
	o misom road (24A1777	- 04)   matrix. Wat	ioi   Gampieu, 202	7 01-17 10.00			
Field Parameters		0.0	AO ≤ 15		°C	2024-01-17	
Temperature, field		8.9	AO ≥ 13		C	2024-01-1/	
Microbiological Par	rameters		1,1,2,1,1		dament d		71-5
Coliforms, Total E. coli		<1	MAC = 0 MAC = 0		CFU/100 mL	2024-01-19 2024-01-19	HT3
		~1	IVIAC = U	1	GF0/100 ML	2024-01-19	піз
Total Metals		0.024	MAC = 0.12	0.00000	ma/l	2024 04 22	
Manganese, total		0.234	MAC = 0.12	0.00020	mg/L	2024-01-22	



REPORTED TO

Quesnel, City of

PROJECT

Monthly Wells

WORK ORDER

24A1772

REPORTED

2024-01-25 09:53

						11.00
Analyte	Result	Guideline	RL	Units	Analyzed	Qualific
WT# 94DF - Well 9 Carson Sub (24A	.1772-05)   Matrix: Wate	r   Sampled: 2024-	01-17 11:50			
Field Parameters						
Temperature, field	9.1	AO ≤ 15		°C	2024-01-17	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-01-19	НТ3
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-01-19	HT3
Total Metals						
Manganese, total	0.146	MAC = 0.12	0.00020	mg/L	2024-01-22	
WT# 28000 - Well 10 Hilborn Road ( Field Parameters Temperature, field	24A1772-06)   Matrix: W	/ater   Sampled: 20 AO ≤ 15	24-01-17 14:	00 °C	2024-01-17	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-01-19	НТ3
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-01-19	HT3
E. COII				Control of the Contro	72501 20 10 10 10 10	піз
Total Metals						піз

#### Sample Qualifiers:

HT3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.



#### APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO Quesnel, City of

rel, City of WORK ORDER
ly Wells REPORTED

PROJECT Monthly Wells REPORTED 2024-01-25 09:53

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

#### Glossary of Terms:

RL Reporting Limit (default)

Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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24A1772



### **CERTIFICATE OF ANALYSIS**

REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

PO NUMBER

**PROJECT** 

Monthly Wells

PROJECT INFO

WORK ORDER

24B1516

RECEIVED / TEMP

2024-02-14 14:05 / 4.1°C

REPORTED

2024-02-22 11:30

**COC NUMBER** 

No Number

#### Introduction:

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If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead Account Manager A what

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REPORTED TO PROJECT	Quesnel, City of Monthly Wells			No.	WORK ORDER REPORTED	24B1516 2024-02-2	2 11:30
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94D1 - Well	3 Rolph at Roddis (24B1	516-01)   Matrix: \	Water   Sampled: 2	024-02-13 11	:30		
Field Parameters							
Temperature, field	1	10.3	AO ≤ 15		°C	2024-02-13	
Microbiological Pa	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-02-14	
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-02-14	
Total Metals							
Manganese, total		0.376	MAC = 0.12	0.00020	mg/L	2024-02-20	
WT# 94DC - Well	6 Rolph at Robertson (2	4B1516-02)   Matr	ix: Water   Sample	d: 2024-02-1	3 13:45		
Field Parameters							
Temperature, field	j	10.3	AO ≤ 15		°C	2024-02-13	
Microbiological Pa	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-02-14	
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-02-14	
Total Metals							
Manganese, total		0.259	MAC = 0.12	0.00020	mg/L	2024-02-20	
WT# 94E0 - Well Field Parameters	7 N. Fraser Drive (24B15	16-03)   Matrix: W	ater   Sampled: 20	24-02-13 14:	30	Trong	
Temperature, field	1	8.1	AO ≤ 15		°C	2024-02-13	
Microbiological Pa	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-02-14	
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-02-14	
Total Metals							
Manganese, total		0.0126	MAC = 0.12	0.00020	mg/L	2024-02-20	
WT# 94E1 - Well	8 Hilborn Road (24B1516	6-04)   Matrix: Wat	er   Sampled: 2024	1-02-13 09:30			
Field Parameters							
Temperature, field	d	5.9	AO ≤ 15		°C	2024-02-13	
Microbiological Pa	nrameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-02-14	
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-02-14	
Total Metals							



REPORTED TO PROJECT

Quesnel, City of

Monthly Wells

WORK ORDER

24B1516

REPORTED

2024-02-22 11:30

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94DF - Well 9 Carson Sub (24B1	1516-05)   Matrix: Wate	r   Sampled: 2024-	02-13 10:30			
Field Parameters						
Temperature, field	9.0	AO ≤ 15		°C	2024-02-13	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-02-14	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-02-14	
Total Metals						
Manganese, total	0.148	MAC = 0.12	0.00020	mg/L	2024-02-20	
WT# 28000 - Well 10 Hilborn Road (2  Field Parameters  Temperature, field	4B1516-06)   Matrix: W	/ater   Sampled: 20 AO ≤ 15	24-02-13 13:	<b>15</b> ℃	2024-02-13	
	0.0	7.00			2021 02 10	
Microbiological Parameters				0511400	0004.00.44	
Coliforms, Total	<1	MAC = 0		CFU/100 mL	2024-02-14	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-02-14	
Total Metals						
Manganese, total	0.488	MAC = 0.12	0.00020	mg/L	2024-02-20	



### **APPENDIX 1: SUPPORTING INFORMATION**

REPORTED TO PROJECT

Quesnel, City of Monthly Wells WORK ORDER

24B1516

REPORTED

2024-02-22 11:30

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

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MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

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REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

PO NUMBER

Introduction:

**PROJECT** 

Monthly Wells

**PROJECT INFO** 

WORK ORDER

24D1298

RECEIVED / TEMP

2024-04-10 15:30 / 7.6°C

REPORTED **COC NUMBER**  2024-04-17 11:51 No Number

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Authorized By:

**Brent Whitehead** Account Manager which

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REPORTED TO Quesnel, City of PROJECT Monthly Wells				WORK ORDER REPORTED	24D1298 2024-04-1	7 11:51
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94D1 - Well 3 Rolph at Roddis (24D1	298-01)   Matrix: \	Water   Sampled: 2	024-04-09 11	:00		
Field Parameters						
Temperature, field	8.6	AO ≤ 15		°C	2024-04-09	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-04-10	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-04-10	
Total Metals						
Manganese, total	0.447	MAC = 0.12	0.00020	mg/L	2024-04-14	
WT# 94DC - Well 6 Rolph at Robertson (2 Field Parameters	4D1298-02)   Matr	ix: Water   Sample	d: 2024-04-0	9 11:40		
Temperature, field	8.7	AO ≤ 15		°C	2024-04-09	
Microbiological Parameters					10000	
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-04-10	
E. coli	< 1	MAC = 0		CFU/100 mL	2024-04-10	
Total Metals						
Manganese, total	0.258	MAC = 0.12	0.00020	ma/l	2024-04-14	
WT# 94E0 - Well 7 N. Fraser Drive (24D12	98-03)   Matrix: W	ater   Sampled: 20	24-04-09 10:	00		
Temperature, field	8.4	AO ≤ 15		°C	2024-04-09	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-04-10	НТ3
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-04-10	НТЗ
Total Metals						
Manganese, total	0.0135	MAC = 0.12	0.00020	mg/L	2024-04-14	
WT# 94E1 - Well 8 Hilborn Road (24D1298	3-04)   Matrix: Wat	ter   Sampled: 2024	1-04-09 13:00	)		
Field Parameters		10			0004.54.55	
Temperature, field	8.7	AO ≤ 15		°C	2024-04-09	-
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0		CFU/100 mL	2024-04-10	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-04-10	
Total Metals	0.000		0.0005		00013111	
Manganese, total	0.249	MAC = 0.12	0.00020	mg/L	2024-04-14	



REPORTED TO PROJECT	Quesnel, City of Monthly Wells				WORK ORDER REPORTED	24D1298 2024-04-1	7 11:51
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifier

Field Parameters						
Temperature, field	8.2	AO ≤ 15		°C	2024-04-09	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-04-10	HT3
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-04-10	НТЗ
Total Metals						
Manganese, total	0.151	MAC = 0.12	0.00020	mg/L	2024-04-14	

# WT# 28000 - Well 10 Hilborn Road (24D1298-06) | Matrix: Water | Sampled: 2024-04-09 13:45

Field Parameters				
Temperature, field	8.4	AO ≤ 15	°C	2024-04-09
Microbiological Parameters				
Coliforms, Total	< 1	MAC = 0	1 CFU/100 mL	2024-04-10
E. coli	< 1	MAC = 0	1 CFU/100 mL	2024-04-10
Total Metals				
Manganese, total	0.556	MAC = 0.12	0.00020 mg/L	2024-04-14

#### Sample Qualifiers:

HT3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.



### APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT

Quesnel, City of

Monthly Wells

WORK ORDER

24D1298

REPORTED

2024-04-17 11:51

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	1	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

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### CERTIFICATE OF ANALYSIS

REPORTED TO Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

PO NUMBER

PROJECT

Monthly Wells

**PROJECT INFO** 

WORK ORDER

24E1453

RECEIVED / TEMP

2024-05-10 14:52 / 13.9°C

REPORTED

2024-05-17 16:16

**COC NUMBER** No Number

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PROJECT	Quesnel, City of Monthly Wells				WORK ORDER REPORTED	24E1453 2024-05-1	7 16:16
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifier
WT# 94D1 - Well	3 Rolph at Roddis (24E1	453-01)   Matrix: V	Vater   Sampled: 2	024-05-09 11	:00		
Field Parameters							
Temperature, field		12.3	AO ≤ 15		°C	2024-05-09	
Microbiological Pa	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-05-10	
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-05-10	
Total Metals							
Manganese, total		0.498	MAC = 0.12	0.00020	mg/L	2024-05-14	
WT# 94DC - Well	6 Rolph at Robertson (2	4E1453-02)   Matr	ix: Water   Sample	d: 2024-05-0	11:45		
Field Parameters							
Temperature, field		10.9	AO ≤ 15		°C	2024-05-09	
Microbiological Pa	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-05-10	
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-05-10	
Total Metals							
Manganese, total		0.246	MAC = 0.12	0.00020	mg/L	2024-05-14	
WT# 94E0 - Well	7 N. Fraser Drive (24E14	53-03)   Matrix: W	ater I Sampled: 20	24-05-09 10:	15		
		9.1	AO ≤ 15	54 (S) (14 (14)	°C	2024-05-09	
Field Parameters Temperature, field			2000		°C	2024-05-09	
Field Parameters Temperature, field Microbiological Pa		9.1	AO ≤ 15		Van Vo		
Field Parameters			2000	1	°C  CFU/100 mL  CFU/100 mL	2024-05-09 2024-05-10 2024-05-10	
Field Parameters Temperature, field Microbiological Pa Coliforms, Total E. coli		9.1	AO ≤ 15 MAC = 0	1	CFU/100 mL	2024-05-10	
Field Parameters Temperature, field Microbiological Pa Coliforms, Total		9.1	AO ≤ 15 MAC = 0	1	CFU/100 mL CFU/100 mL	2024-05-10	
Field Parameters Temperature, field Microbiological Pa Coliforms, Total E. coli Total Metals Manganese, total WT# 94E1 - Well		9.1	$AO \le 15$ $MAC = 0$ $MAC = 0$ $MAC = 0.12$	0.00020	CFU/100 mL CFU/100 mL mg/L	2024-05-10 2024-05-10	
Field Parameters Temperature, field Microbiological Pa Coliforms, Total E. coli Total Metals Manganese, total WT# 94E1 - Well Field Parameters	rameters 8 Hilborn Road (24E1453	9.1 < 1 < 1 0.0132 3-04)   Matrix: Wat	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0.12  er   Sampled: 2024	0.00020	CFU/100 mL CFU/100 mL mg/L	2024-05-10 2024-05-10 2024-05-17	
Field Parameters Temperature, field Microbiological Pa Coliforms, Total E. coli Total Metals Manganese, total	rameters 8 Hilborn Road (24E1453	9.1	$AO \le 15$ $MAC = 0$ $MAC = 0$ $MAC = 0.12$	0.00020	CFU/100 mL CFU/100 mL mg/L	2024-05-10 2024-05-10	
Field Parameters Temperature, field Microbiological Pa Coliforms, Total E. coli Total Metals Manganese, total WT# 94E1 - Well Field Parameters	rameters 8 Hilborn Road (24E1453	9.1 < 1 < 1 0.0132 3-04)   Matrix: Wat	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0.12  er   Sampled: 2024	0.00020	CFU/100 mL CFU/100 mL mg/L	2024-05-10 2024-05-10 2024-05-17	
Field Parameters Temperature, field Microbiological Pa Coliforms, Total E. coli  Total Metals Manganese, total  WT# 94E1 - Well  Field Parameters Temperature, field Microbiological Pa Coliforms, Total	rameters 8 Hilborn Road (24E1453	9.1  < 1 < 1 0.0132  3-04)   Matrix: Wat  7.9	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0.12  er   Sampled: 2024  AO ≤ 15  MAC = 0	1 0.00020 - <b>05-09 13:45</b>	CFU/100 mL CFU/100 mL mg/L  °C CFU/100 mL	2024-05-10 2024-05-10 2024-05-17 2024-05-09 2024-05-10	
Field Parameters Temperature, field Microbiological Pa Coliforms, Total E. coli  Total Metals Manganese, total  WT# 94E1 - Well  Field Parameters Temperature, field Microbiological Pa	rameters 8 Hilborn Road (24E1453	9.1 < 1 < 1 0.0132 3-04)   Matrix: Wat	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0.12  er   Sampled: 2024  AO ≤ 15	1 0.00020 - <b>05-09 13:45</b>	CFU/100 mL CFU/100 mL mg/L	2024-05-10 2024-05-10 2024-05-17 2024-05-09	
Field Parameters Temperature, field Microbiological Pa Coliforms, Total E. coli  Total Metals Manganese, total  WT# 94E1 - Well  Field Parameters Temperature, field Microbiological Pa Coliforms, Total	rameters 8 Hilborn Road (24E1453	9.1  < 1 < 1 0.0132  3-04)   Matrix: Wat  7.9	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0.12  er   Sampled: 2024  AO ≤ 15  MAC = 0	1 0.00020 - <b>05-09 13:45</b>	CFU/100 mL CFU/100 mL mg/L  °C CFU/100 mL	2024-05-10 2024-05-10 2024-05-17 2024-05-09 2024-05-10	



REPORTED TO	Quesnel, City of	WORK ORDER	24E1453
PROJECT	Monthly Wells	REPORTED	2024-05-17 16:16

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94DF - Well 9 Carson Sub (24E	1453-05)   Matrix: Wate	r   Sampled: 2024-	05-09 09:30			
Field Parameters						
Temperature, field	9.0	AO ≤ 15		°C	2024-05-09	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-05-10	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-05-10	
Total Metals						
Manganese, total	0.155	MAC = 0.12	0.00020	mg/L	2024-05-14	
WT# 28000 - Well 10 Hilborn Road (2	24E1453-06)   Matrix: W	ater   Sampled: 20	24-05-09 13:	15		
Field Parameters  Temperature, field	9.5	AO ≤ 15		°C	2024-05-09	
Field Parameters  Temperature, field  Microbiological Parameters	9.5	AO ≤ 15		°C	2024-05-09	
Temperature, field	9.5	AO ≤ 15 MAC = 0	1	°C CFU/100 mL	2024-05-09	
Temperature, field  Microbiological Parameters			1			
Temperature, field  Microbiological Parameters  Coliforms, Total	< 1	MAC = 0	1 1	CFU/100 mL	2024-05-10	



REPORTED TO PROJECT

Quesnel, City of

Monthly Wells

WORK ORDER

24E1453

REPORTED

2024-05-17 16:16

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

#### Glossary of Terms:

RL Reporting Limit (default)

Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

PO NUMBER

PROJECT

Monthly Wells

**PROJECT INFO** 

WORK ORDER

24G3945

RECEIVED / TEMP

2024-07-31 13:45 / 17.5°C

REPORTED COC NUMBER 2024-08-08 11:10

No Number

#### Introduction:

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Authorized By:

Brent Whitehead Account Manager M unshired

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PROJECT Monthly	el, City of v Wells			WORK ORDER REPORTED	24G3945 2024-08-0	8 11:10
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94D1 - Well 3 Rolph a	t Roddis (24G3945-01)   Matrix:	Water   Sampled: 2	024-07-30 11	:00		
Field Parameters						
Temperature, field	12.1	AO ≤ 15		°C	2024-07-30	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-07-31	
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-07-31	
Total Metals						
Manganese, total	0.600	MAC = 0.12	0.00020	mg/L	2024-08-02	
WT# 94DC - Well 6 Rolph a	at Robertson (24G3945-02)   Mati	rix: Water   Sample	d: 2024-07-3	0 11:30		
Field Parameters						
Temperature, field	12.2	AO ≤ 15		°C	2024-07-30	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-07-31	
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-07-31	
Total Metals						
Manganese, total	0.215	MAC = 0.12	0.00020	ma/L	2024-08-02	
AND AND THE RESERVE	er Drive (24G3945-03)   Matrix: W	/ater   Sampled: 20 AO ≤ 15	24-07-30 09:	<b>20</b> ℃	2024-07-30	
Field Parameters Temperature, field			24-07-30 09:		2024-07-30	
Field Parameters Temperature, field					2024-07-30	НТ3
Field Parameters Temperature, field Microbiological Parameters	11.4	AO ≤ 15	1	°C		HT3 HT3
Field Parameters Temperature, field Microbiological Parameters Coliforms, Total E. coli	11.4	AO ≤ 15 MAC = 0	1	°C CFU/100 mL	2024-07-31	
Field Parameters Temperature, field Microbiological Parameters Coliforms, Total	11.4	AO ≤ 15 MAC = 0	1	°C  CFU/100 mL  CFU/100 mL	2024-07-31	
Field Parameters Temperature, field  Microbiological Parameters Coliforms, Total E. coli  Total Metals Manganese, total	11.4 < 1 < 1	AO ≤ 15  MAC = 0  MAC = 0  MAC = 1	0.00020	°C  CFU/100 mL  CFU/100 mL  mg/L	2024-07-31 2024-07-31	
Field Parameters Temperature, field  Microbiological Parameters Coliforms, Total E. coli  Total Metals Manganese, total  WT# 94E1 - Well 8 Hilborn	11.4 < 1 < 1 0.0190	AO ≤ 15  MAC = 0  MAC = 0  MAC = 1	0.00020	°C  CFU/100 mL  CFU/100 mL  mg/L	2024-07-31 2024-07-31	
Field Parameters Temperature, field  Microbiological Parameters Coliforms, Total E. coli  Total Metals Manganese, total  WT# 94E1 - Well 8 Hilborn	11.4 < 1 < 1 0.0190	AO ≤ 15  MAC = 0  MAC = 0  MAC = 1	0.00020	°C  CFU/100 mL  CFU/100 mL  mg/L	2024-07-31 2024-07-31	
Field Parameters Temperature, field  Microbiological Parameters Coliforms, Total E. coli  Total Metals Manganese, total  WT# 94E1 - Well 8 Hilborn  Field Parameters	11.4 < 1 < 1 0.0190  Road (24G3945-04)   Matrix: Wat	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0.12  ter   Sampled: 2024	0.00020	°C  CFU/100 mL  CFU/100 mL  mg/L	2024-07-31 2024-07-31 2024-08-02	
Field Parameters Temperature, field  Microbiological Parameters Coliforms, Total E. coli  Total Metals Manganese, total  WT# 94E1 - Well 8 Hilborn  Field Parameters Temperature, field	11.4 < 1 < 1 0.0190  Road (24G3945-04)   Matrix: Wat	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0.12  ter   Sampled: 2024	0.00020 1-07-30 14:00	°C  CFU/100 mL  CFU/100 mL  mg/L	2024-07-31 2024-07-31 2024-08-02	
Field Parameters Temperature, field Microbiological Parameters Coliforms, Total E. coli Total Metals Manganese, total WT# 94E1 - Well 8 Hilborn Field Parameters Temperature, field Microbiological Parameters	11.4  < 1 < 1  < 1  0.0190  Road (24G3945-04)   Matrix: Wat	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0.12  ter   Sampled: 2024	0.00020 1-07-30 14:00	°C  CFU/100 mL  CFU/100 mL  mg/L  °C	2024-07-31 2024-07-31 2024-08-02 2024-07-30	
Field Parameters Temperature, field  Microbiological Parameters Coliforms, Total E. coli  Total Metals Manganese, total  WT# 94E1 - Well 8 Hilborn  Field Parameters Temperature, field  Microbiological Parameters Coliforms, Total	11.4  < 1 < 1  0.0190  Road (24G3945-04)   Matrix: Wat	AO ≤ 15  MAC = 0  MAC = 0  MAC = 0.12  ter   Sampled: 2024  AO ≤ 15  MAC = 0	0.00020 1-07-30 14:00	°C  CFU/100 mL  CFU/100 mL  mg/L  °C  CFU/100 mL	2024-07-31 2024-07-31 2024-08-02 2024-07-30	





REPORTED TO Quesnel, City of WORK ORDER 24G3945
PROJECT Monthly Wells REPORTED 2024-08-08 11:10

PROJECT IMONTHLY Wells				REPORTED	2024-08-0	8 11:10
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
WT# 94DF - Well 9 Carson Sub (24G	3945-05)   Matrix: Wate	er   Sampled: 2024-	07-30 10:00			
Field Parameters						
Temperature, field	11.2	AO ≤ 15		°C	2024-07-30	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-07-31	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-07-31	
Total Metals						
Manganese, total	0.150	MAC = 0.12	0.00020	mg/L	2024-08-02	
WT# 28000 - Well 10 Hilborn Road (			24-07-30 14:			
Temperature, field	12.0	AO ≤ 15		°C	2024-07-30	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-07-31	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-07-31	
Total Metals						
Manganese, total	0.593	MAC = 0.12	0.00020		2024-08-02	

### Sample Qualifiers:

HT3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.



REPORTED TO PROJECT

Quesnel, City of Monthly Wells WORK ORDER

24G3945

REPORTED

2024-08-08 11:10

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

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REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

PO NUMBER

**PROJECT** 

Monthly Wells

**PROJECT INFO** 

WORK ORDER

2411333

RECEIVED / TEMP

2024-09-11 14:38 / 8.6°C

REPORTED COC NUMBER 2024-09-18 14:47

No Number

#### Introduction:

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Authorized By:

**Brent Whitehead** Account Manager which

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Manganese, total

REPORTED TO PROJECT	Quesnel, City of Monthly Wells				WORK ORDER REPORTED	24I1333 2024-09-1	8 14.47
	Worlding Wells				KEPOKILD	2024-03-1	0 14.47
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94D1 - Well 3	Rolph at Roddis (24I13	33-01)   Matrix: W	ater   Sampled: 20	24-09-10 08:	15		
Field Parameters							
Temperature, field		10.0	AO ≤ 15		°C	2024-09-10	
Microbiological Par	ameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-09-11	НТ3
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-09-11	HT3
Total Metals							
Manganese, total		0.219	MAC = 0.12	0.00020	mg/L	2024-09-14	
WT# 04DC Well	C Dalph at Bahartaan /2	414222 02) I Matri	Water I Samulad	. 2024 00 40	00.45		
	6 Rolph at Robertson (2	41 1333-02)   Watri	A. Water   Sampled	. 2024-03-10			
Field Parameters			40 - 45		**	0004.00.10	
Temperature, field	and an a	10.0	AO ≤ 15		°C	2024-09-10	
Microbiological Par	ameters						
Coliforms, Total		< 1	MAC = 0		CFU/100 mL	2024-09-11	HT3
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-09-11	HT3
Total Metals							
Manganese, total		0.204	MAC = 0.12	0.00020	mg/L	2024-09-14	
WT# 04E0 Woll 7	N. Fraser Drive (24I133	3-03)   Matrix: Wa	ter   Sampled: 202	4-09-10 11:3	5		
VVI# 94EU - VVEII /		and a second control of					
Field Parameters	(						
	<b>(</b>	9.0	AO ≤ 15		°C	2024-09-10	
Field Parameters Temperature, field			AO ≤ 15		°C	2024-09-10	1
Field Parameters Temperature, field Microbiological Par		9.0		1			
Field Parameters Temperature, field			AO ≤ 15  MAC = 0  MAC = 0		°C  CFU/100 mL  CFU/100 mL	2024-09-10 2024-09-11 2024-09-11	
Field Parameters Temperature, field Microbiological Par Coliforms, Total E. coli		9.0	MAC = 0		CFU/100 mL	2024-09-11	
Field Parameters Temperature, field Microbiological Par Coliforms, Total E. coli Total Metals		9.0 < 1 < 1	MAC = 0 MAC = 0	1	CFU/100 mL CFU/100 mL	2024-09-11 2024-09-11	
Field Parameters Temperature, field Microbiological Par Coliforms, Total E. coli Total Metals Manganese, total	ameters	9.0 < 1 < 1 0.0174	MAC = 0 MAC = 0 MAC = 0.12	0.00020	CFU/100 mL CFU/100 mL	2024-09-11	
Field Parameters Temperature, field Microbiological Par Coliforms, Total E. coli Total Metals Manganese, total WT# 94E1 - Well 8		9.0	MAC = 0 MAC = 0 MAC = 0.12	0.00020	CFU/100 mL CFU/100 mL	2024-09-11 2024-09-11	
Field Parameters Temperature, field Microbiological Par Coliforms, Total E. coli Total Metals Manganese, total	ameters	9.0	MAC = 0 MAC = 0 MAC = 0.12	0.00020	CFU/100 mL CFU/100 mL	2024-09-11 2024-09-11	
Field Parameters Temperature, field Microbiological Par Coliforms, Total E. coli Total Metals Manganese, total WT# 94E1 - Well 8	ameters	9.0	MAC = 0 MAC = 0 MAC = 0.12	0.00020	CFU/100 mL CFU/100 mL	2024-09-11 2024-09-11	
Field Parameters Temperature, field Microbiological Par Coliforms, Total E. coli Total Metals Manganese, total WT# 94E1 - Well 8	ameters 3 Hilborn Road (24l1333	9.0 < 1 < 1 0.0174 -04)   Matrix: Water	MAC = 0 MAC = 0 MAC = 0.12 er   Sampled: 2024-	0.00020	CFU/100 mL CFU/100 mL mg/L	2024-09-11 2024-09-11 2024-09-14	
Field Parameters Temperature, field Microbiological Par Coliforms, Total E. coli Total Metals Manganese, total WT# 94E1 - Well 8 Field Parameters Temperature, field	ameters 3 Hilborn Road (24l1333	9.0 < 1 < 1 0.0174 -04)   Matrix: Water	MAC = 0 MAC = 0 MAC = 0.12 er   Sampled: 2024-	0.00020	CFU/100 mL CFU/100 mL mg/L	2024-09-11 2024-09-11 2024-09-14	HT3

2024-09-14

MAC = 0.12

0.00020 mg/L

0.254





REPORTED TO

Quesnel, City of Monthly Wells WORK ORDER

2411333

REPORTED 2024-09-18 14:47

PROJECT Monthly Wells			REPORTED	2024-09-	18 14:47
Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
WT# 94DF - Well 9 Carson Sub (24l1	333-05)   Matrix: Water	Sampled: 2024-0	9-10 10: <mark>45</mark>		
Field Parameters					
Temperature, field	9.0	AO ≤ 15	°C	2024-09-10	
Microbiological Parameters					
Coliforms, Total	< 1	MAC = 0	1 CFU/100 mL	2024-09-11	
E. coli	< 1	MAC = 0	1 CFU/100 mL	2024-09-11	
Total Metals					
Manganese, total	0.153	MAC = 0.12	0.00020 mg/L	2024-09-14	
WT# 28000 - Well 10 Hilborn Road (2	24l1333-06)   Matrix: W	ater   Sampled: 202	24-09-10 10:10		
Field Parameters					
Temperature, field	8.0	AO ≤ 15	°C	2024-09-10	
Microbiological Parameters					
Coliforms, Total	< 1	MAC = 0	1 CFU/100 mL	2024-09-11	
E. coli	< 1	MAC = 0	1 CFU/100 mL	2024-09-11	
Total Metals					
Manganese, total	0.576	MAC = 0.12	0.00020 mg/L	2024-09-14	

### Sample Qualifiers:

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REPORTED TO PROJECT

Quesnel, City of Monthly Wells WORK ORDER

2411333

REPORTED

2024-09-18 14:47

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond

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REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

PO NUMBER

**PROJECT** Monthly Wells

**PROJECT INFO** 

WORK ORDER

2413176

RECEIVED / TEMP

2024-09-25 14:30 / 15.6°C

REPORTED

2024-10-03 15:09

No Number

COC NUMBER

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Authorized By:

**Brent Whitehead** Account Manager which

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REPORTED TO	Quesnel, City of
DDO IECT	Monthly Wolle

WORK ORDER REPORTED 24|3176

PROJECT Monthly Wells				REPORTED	2024-10-0	3 15:09
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
94D1 Well 3 Rolph at Roddis (24l317	76-01)   Matrix: Water   \$	Sampled: 2024-09-	24 10:30			
Field Parameters						
Temperature, field	17.3	AO ≤ 15		°C	2024-09-24	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-09-25	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-09-25	
Total Metals						
Manganese, total	0.336	MAC = 0.12	0.00020	mg/L	2024-09-28	
94DC Well 6 Rolph/Robertson (24l3	176-02)   Matrix: Water	Sampled: 2024-09	9-24 11:45			
Field Parameters						
Temperature, field	11.9	AO ≤ 15		°C	2024-09-24	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-09-25	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-09-25	
Total Metals						
Manganese, total	0.207	MAC = 0.12	0.00020	mg/L	2024-09-28	
94E0 Well 7 N. Fraser Drive (24l3176) Field Parameters Temperature, field	6-03)   Matrix: Water   Sa	ampled: <b>2024-09-2</b> AO ≤ 15	4 09:45	°C	2024-09-24	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	- 1	CFU/100 mL	2024-09-25	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-09-25	
Total Metals						
Manganese, total	0.0154	MAC = 0.12	0.00020	mg/L	2024-09-28	
WT# 94E1 - Well 8 Hilborn Road (24	AN CARREST					
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-09-25	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-09-25	
Total Metals						
Total Mictais						

94DF Well 9 Carson Sub (24l3176-05) | Matrix: Water | Sampled: 2024-09-24 13:49





REPORTED TO	Quesnel, City of	WORK ORDER	2413176	
PROJECT	Monthly Wells	REPORTED	2024-10-03 15:09	

						111000
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
94DF Well 9 Carson Sub (24l3176-	05)   Matrix: Water   Sam	pled: 2024-09-24 1	3:49, Contin	ued		
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-09-25	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-09-25	
Total Metals						
Manganese, total	0.148	MAC = 0.12	0.00020	mg/L	2024-09-28	
28000 Well 10 Hilborn Road (24l31	76-06)   Matrix: Water   S	ampled: 2024-09-2	24 14:30			
Microbiological Parameters						
Coliforms, Total	≥3	MAC = 0	1	CFU/100 mL	2024-09-25	
Background Colonies	>200	N/A	200	CFU/100 mL	2024-09-25	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-09-25	
Total Metals						
Manganese, total	0.234	MAC = 0.12	0.00020	mg/L	2024-09-28	





REPORTED TO PROJECT

Quesnel, City of Monthly Wells WORK ORDER

2413176

REPORTED

2024-10-03 15:09

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

#### Glossary of Terms:

RL Reporting Limit (default)

Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors

>= Greater than or equal to the specified Result

>2 Greater than the specified Result

°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres

MAC Maximum Acceptable Concentration (health based)

mg/L Milligrams per litre

EPA United States Environmental Protection Agency Test Methods

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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REPORTED TO Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

WORK ORDER

24J1316

PO NUMBER

**PROJECT INFO** 

PROJECT

Monthly Wells

RECEIVED / TEMP REPORTED COC NUMBER 2024-10-09 13:26 / 8.4°C

2024-10-10 14:50

No Number

### Introduction:

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Authorized By:

Brent Whitehead Account Manager M what

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REPORTED TO PROJECT

Quesnel, City of Monthly Wells WORK ORDER REPORTED 24J1316 2024-10-10 14:50

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
WT# 28000 - Well 10 Hilborn Road (2	24J1316-01)   Matrix: W	ater   Sampled: 202	24-10-08 15:16		
Field Parameters					
Temperature, field	9.1	AO ≤ 15	°C	2024-10-08	
Microbiological Parameters					
Coliforms, Total	< 1	MAC = 0	1 CFU/100 mL	2024-10-09	
E. coli	< 1	MAC = 0	1 CFU/100 mL	2024-10-09	



REPORTED TO PROJECT

Quesnel, City of Monthly Wells WORK ORDER

24J1316

REPORTED

2024-10-10 14:50

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	<b>√</b>	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna

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°C Degrees Celcius AO Aesthetic Objective

CFU/100 mL Colony Forming Units per 100 millilitres

MAC Maximum Acceptable Concentration (health based)

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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REPORTED TO

Quesnel, City of

1350 Sword Ave

Quarterly Wells

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

WORK ORDER

24C1508

RECEIVED / TEMP

2024-03-13 14:27 / 4.4°C

REPORTED

2024-03-19 12:10

PO NUMBER PROJECT

PROJECT INFO

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							M	
REPORTED TO PROJECT	Quesnel, City of Quarterly Wells				WORK ORDER REPORTED	24C1508 2024-03-1	19 12:10	
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifie	
94D1 Well 3 Rolph	at Roddis (24C1508-01	)   Matrix: Water	Sampled: 2024-03-	-12 10:35				
Anions								
Chloride		8.62	AO ≤ 250	0.10	mg/L	2024-03-14		
Nitrate (as N)		< 0.010	MAC = 10	0.010	mg/L	2024-03-14		
Nitrite (as N)		< 0.010	MAC = 1	0.010	mg/L	2024-03-14		
Field Parameters								
Temperature, field		8.1	AO ≤ 15		°C	2024-03-12		
	novidedo -	- 1	1.0 - 10		-	202.00 12		
Microbiological Para	ameters				42.00	2027		
Coliforms, Total E. coli		< 1	MAC = 0		CFU/100 mL	2024-03-13		
E. COII	SALE PRIME	<1	MAC = 0		CFU/100 mL	2024-03-13		
94DC Well 6 Rolph	n/Robertson (24C1508-0	02)   Matrix: Water	Sampled: 2024-0	3-12 11:10				
Anions								
Chloride		17.8	AO ≤ 250	0.10	mg/L	2024-03-14		
Nitrate (as N)		< 0.010	MAC = 10	0.010	mg/L	2024-03-14		
Nitrite (as N)		< 0.010	MAC = 1	0.010	mg/L	2024-03-14		
Field Parameters								
Temperature, field		8.0	AO ≤ 15		°C	2024-03-12		
Microbiological Para	ameters							
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-03-13		
E. coli		< 1	MAC = 0	1	CFU/100 mL	2024-03-13		
94E0 Well 7 N. Fra	ser Drive (24C1508-03)	Matrix: Water   \$	Sampled: 2024-03-1	2 11:45				
Anions								
Chloride		8.95	AO ≤ 250	0.10	mg/L	2024-03-14		
Nitrate (as N)		< 0.010	MAC = 10		mg/L	2024-03-14		
Nitrite (as N)		< 0.010	MAC = 1	0.010	mg/L	2024-03-14		
Field Parameters								
Temperature, field		6.8	AO ≤ 15		°C	2024-03-12		
Microbiological Para	ameters							
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-03-13		
E. coli		< 1	MAC = 0		CFU/100 mL	2024-03-13		
94E1 Well 8 Hilbor	rn Road (24C1508-04)	Matrix: Water   Sa	mpled: 2024-03-12	10:00				
Anions								
Chloride		5.95	AO ≤ 250	0.10	mg/L	2024-03-15		
Nitrate (as N)		< 0.010	MAC = 10	0.010		2024-03-15		
							Page 2 c	



REPORTED TO

Quesnel, City of

PROJECT

Quarterly Wells

WORK ORDER

24C1508

REPORTED

2024-03-19 12:10

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
94E1 Well 8 Hilborn Road (24C1508-	04)   Matrix: Water   Sa	mpled: 2024-03-12	10:00, Cont	inued		
Anions, Continued						
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2024-03-15	
Field Parameters						
Temperature, field	6.9	AO ≤ 15		°C	2024-03-12	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-03-13	
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-03-13	
94DF Well 9 Carson Sub (24C1508-0	-/					
Chloride	2.85	AO ≤ 250	0.10	mg/L	2024-03-15	
Nitrate (as N)	< 0.010	MAC = 10	0.010	mg/L	2024-03-15	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2024-03-15	
Field Parameters						
Temperature, field	8.8	AO ≤ 15		°C	2024-03-12	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-03-13	HT3
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-03-13	HT3
28000 Well 10 Hilborn Road (24C150	08-06)   Matrix: Water	Sampled: 2024-03-1	2 13:15			
Anions						
Chloride	15.1	AO ≤ 250	0.10	mg/L	2024-03-15	
Nitrate (as N)	0.011	MAC = 10	0.010	mg/L	2024-03-15	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2024-03-15	
Field Parameters						
Temperature, field	7.2	AO ≤ 15		°C	2024-03-12	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-03-13	

### Sample Qualifiers:

HT3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.



REPORTED TO

Quesnel, City of

PROJECT Quarterly Wells

WORK ORDER

24C1508

REPORTED

2024-03-19 12:10

Analysis Description	Method Ref.	Technique	Accredited	Location
Anions in Water	SM 4110 B (2020)	Ion Chromatography	/	Kelowna
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna

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REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

WORK ORDER

24J3101

PO NUMBER

**PROJECT** 

Quarterly Wells

RECEIVED / TEMP REPORTED

2024-10-23 12:30 / 5.7°C

**COC NUMBER** 

2024-10-28 11:07 No Number

**PROJECT INFO** 

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Authorized By:

Hanane El Hannaoui Junior Account Manager

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REPORTED TO	Quesnel, City of	WORK ORDER	24J3101
PROJECT	Quarterly Wells	REPORTED	2024-10-28 11:07

PROJECT Quarterly W				REPORTED	24J3101 2024-10-2	28 11:07
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
WT# 94D1 - Well 3 Rolph at Ro	ddis (24J3101-01)   Matrix: V	Vater   Sampled: 20	24-10-22 11	:20		
Anions						
Chloride	8.19	AO ≤ 250	0.10	mg/L	2024-10-25	
Nitrate (as N)	< 0.010	MAC = 10	0.010	mg/L	2024-10-25	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2024-10-25	
Field Parameters						
Temperature, field	7.4	AO ≤ 15		°C	2024-10-22	<u> </u>
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-10-23	
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-10-23	
WT# 94DC - Well 6 Rolph at Ro	obertson (24J3 <mark>101-02)   M</mark> atri	ix: Water   Sampled	: <mark>20</mark> 24-10-2	2 10:40		
Chloride	16.3	AO ≤ 250	0.10	mg/L	2024-10-25	
Nitrate (as N)	< 0.010	MAC = 10	0.010	mg/L	2024-10-25	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2024-10-25	
Field Parameters						
Temperature, field	7.6	AO ≤ 15		°C	2024-10-22	1
Microbiological Parameters						

### WT# 94E0 - Well 7 N. Fraser Drive (24J3101-03) | Matrix: Water | Sampled: 2024-10-22 13:10

< 1

Anions				
Chloride	7.16	AO ≤ 250	0.10 mg/L	2024-10-25
Nitrate (as N)	0.028	MAC = 10	0.010 mg/L	2024-10-25
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2024-10-25
Field Parameters				
Temperature, field	7.2	AO ≤ 15	°C	2024-10-22
Microbiological Parameters				
Coliforms, Total	< 1	MAC = 0	1 CFU/100 mL	2024-10-23
E. coli	< 1	MAC = 0	1 CFU/100 mL	2024-10-23

MAC = 0

MAC = 0

1 CFU/100 mL

1 CFU/100 mL

2024-10-23

2024-10-23

### WT# 94E1 - Well 8 Hilborn Road (24J3101-04) | Matrix: Water | Sampled: 2024-10-22 09:50

Anions				
Chloride	4.85	AO ≤ 250	0.10 mg/L	2024-10-25
Nitrate (as N)	< 0.010	MAC = 10	0.010 mg/L	2024-10-25

Coliforms, Total

E. coli





REPORTED TO Quesnel, City of PROJECT Quarterly Wells

WORK ORDER REPORTED 24J3101 2024-10-28 11:**07** 

PROJECT Quarterly Wells				REPORTED	2024-10-2	28 11:07
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
WT# 94E1 - Well 8 Hilborn Road (24-	J3101-04)   Matrix: Wate	er   Sampled: 2024-	10-22 09:50	Continued		
Anions, Continued	1100					
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2024-10-25	
Field Parameters						
Temperature, field	7.1	AO ≤ 15		°C	2024-10-22	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-10-23	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-10-23	
WT# 94DF - Well 9 Carson Sub (24J	3101-05)   Matrix: Water	Sampled: 2024-1	0-22 14:00			
Anions		10050	0.40	"	0004 40 05	
Chloride	3.24 < 0.010	AO ≤ 250 MAC = 10	0.10	mg/L	2024-10-25 2024-10-25	
Nitrate (as N) Nitrite (as N)	< 0.010	MAC = 10	0.010		2024-10-25	
Field Parameters						
Temperature, field	7.8	AO ≤ 15		°C	2024-10-22	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-10-23	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-10-23	
WT# 28000 - Well 10 Hilborn Road (2	24J3101-06)   Matrix: W	ater   Sampled: 202	4-10-22 09:	15		
Chloride	16.0	AO ≤ 250	0.10	mg/L	2024-10-25	
Nitrate (as N)	< 0.010	MAC = 10	0.010		2024-10-25	
Nitrite (as N)	< 0.010	MAC = 1		mg/L	2024-10-25	
Field Parameters						
Temperature, field	7.4	AO ≤ 15		°C	2024-10-22	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-10-23	
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-10-23	





REPORTED TO

Quesnel, City of

**PROJECT** 

Quarterly Wells

WORK ORDER

24J3101

REPORTED

2024-10-28 11:07

Analysis Description	Method Ref.	Technique	Accredited	Location
Anions in Water	SM 4110 B (2020)	Ion Chromatography	1	Kelowna
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna

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mg/L Milligrams per litre

SM Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

ATTENTION

Joe Law

PO NUMBER

**PROJECT** 

Quarterly Wells

PROJECT INFO

WORK ORDER

24K2338

RECEIVED / TEMP

2024-11-20 13:37 / 6.0°C

REPORTED

2024-11-25 10:57

**COC NUMBER** 

No Number

### Introduction:

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Authorized By:

Hanane El Hannaoui Junior Account Manager FIG

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REPORTED TO	Quesnel, City of	WORK ORDER	24K2338
PROJECT	Quarterly Wells	REPORTED	2024-11-25 10:57

					2577077575	7 7 7 7
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94D1 - Well 3 Rolph at Roddis (	24K2338-01)   Matrix: V	Vater   Sampled: 20	24-11-19 11	:00		
Anions						
Chloride	7.95	AO ≤ 250	0.10	mg/L	2024-11-21	
Nitrate (as N)	< 0.010	MAC = 10	0.010	mg/L	2024-11-21	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2024-11-21	
Field Parameters						
Temperature, field	9.3	AO ≤ 15		°C	2024-11-19	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-11-20	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-11-20	
WT# 94DC - Well 6 Rolph at Roberts  Anions	on (2412000-02)   Matt	A Hatel   Gampleu	2024-11-1			
Chloride	16.2	AO ≤ 250	0.10	mg/L	2024-11-21	
Nitrate (as N)	< 0.010	MAC = 10	0.010		2024-11-21	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2024-11-21	
Field Parameters						
Temperature, field	9.2	AO ≤ 15		°C	2024-11-19	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-11-20	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-11-20	
WT# 94E0 - Well 7 N. Fraser Drive (2-Anions Chloride	4K2338-03)   Matrix: Wa	ater   Sampled: 202 AO ≤ 250		mg/L	2024-11-21	
Nitrate (as N)	< 0.010	MAC = 10	0.010		2024-11-21	
Nitrite (as N)	< 0.010	MAC = 1	0.010		2024-11-21	
Field Parameters						
Temperature, field	9.4	AO ≤ 15		°C	2024-11-19	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-11-20	
E. coli	< 1	MAC = 0		CFU/100 mL	2024-11-20	
WT# 94E1 - Well 8 Hilborn Road (24k	(2338-04)   Matrix: Wat	er   Sampled: 2024	-11-19 09:30			
Anions						
Chloride	20.00	4.2 0.224	10.0	6704		
194.0/m-30-0/30-00	6.45	AO ≤ 250	0.10	mg/L	2024-11-21	



REPORTED TO	Quesnel, City of
PPO IECT	Quarterly Wells

WORK ORDER

24K2338

PROJECT Quarterly Wells					2024-11-25 10:57	
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94E1 - Well 8 Hilborn Road (24	(2338-04)   Matrix: Wate	er   Sampled: 2024	-11-19 09:30	, Continued		
Anions, Continued						
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2024-11-21	
Field Parameters						
Temperature, field	8.9	AO ≤ 15		°C	2024-11-19	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-11-20	
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-11-20	
WT# 94DF - Well 9 Carson Sub (24K	2338-05)   Matrix: Wate	r   Sampled: 2024-1	11-19 10:20			
Anions	244	AO < 250	0.10	ma/l	2024-11-21	
Chloride	3.14 < 0.010	AO ≤ 250 MAC = 10	0.10	mg/L	2024-11-21	
Nitrate (as N) Nitrite (as N)	< 0.010	MAC = 1	0.010		2024-11-21	
Field Parameters	. 0.010	100.10	0.010	9.2		
	0.4	AO ≤ 15		°C	2024-11-19	
Temperature, field	9.1	AU 2 15		C	2024-11-19	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0		CFU/100 mL	2024-11-20	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-11-20	
WT# 28000 - Well 10 Hilborn Road (2	24K2338-06)   Matrix: W	ater   Sampled: 20	24-11-19 13:	40		
Anions						
Chloride	15.6	AO ≤ 250	0.10	mg/L	2024-11-21	
Nitrate (as N)	< 0.010	MAC = 10	0.010	mg/L	2024-11-21	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2024-11-21	
Field Parameters						
Temperature, field	9.2	AO ≤ 15		°C	2024-11-19	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-11-20	
E. coli	<1	MAC = 0	1	CFU/100 mL	2024-11-20	



REPORTED TO Quesnel, City of WORK ORDER 24K2338

PROJECT Quarterly Wells REPORTED 2024-11-25 10:57

Analysis Description	Method Ref.	Technique	Accredited	Location
Anions in Water	SM 4110 B (2020)	Ion Chromatography	<b>✓</b>	Kelowna
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

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REPORTED TO

Quesnel, City of

1350 Sword Ave

Quesnel, BC V2J 7H2

**ATTENTION** 

Joe Law

WORK ORDER

24L2142

PO NUMBER

**PROJECT INFO** 

**PROJECT** 

Quarterly Wells

RECEIVED / TEMP REPORTED 2024-12-18 13:24 / 5.9°C 2024-12-27 09:17

COC NUMBER

No Number

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Authorized By:

Hanane El Hannaoui Junior Account Manager FIG

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REPORTED TO PROJECT	Quesnel, City of Quarterly Wells				WORK ORDER REPORTED	24L2142 2024-12-2	7 09:17
Analyte		Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94D1 - Well	3 Rolph at Roddis (24L2	142-01)   Matrix: V	Vater   Sampled: 20	24-12-17 12	:00		
Anions							
Chloride		8.00	AO ≤ 250	0.10	mg/L	2024-12-19	
Nitrate (as N)		< 0.010	MAC = 10	0.010		2024-12-19	
Nitrite (as N)		< 0.010	MAC = 1	0.010	mg/L	2024-12-19	
Field Parameters							
Temperature, field		7.5	AO ≤ 15		°C	2024-12-17	
Microbiological Pa	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-12-18	
E. coli		< 1	MAC = 0		CFU/100 mL	2024-12-18	
WT# 94DC - Well Anions	6 Rolph at Robertson (2	4L2142-02)   Matri	x: Water   Sampled	l: 202 <mark>4-12-1</mark>	7 10:40		
		40.0	10 < 050	0.40		0004.40.40	
Chloride		16.8	AO ≤ 250		mg/L	2024-12-19	
Nitrate (as N) Nitrite (as N)		0.013 < 0.010	MAC = 10 MAC = 1	0.010		2024-12-19	
		10.010	WAG - 1	0.010	mg/L	2024-12-13	
Field Parameters			10 115		10	0004.40.47	
Temperature, field		7.2	AO ≤ 15		°C	2024-12-17	
Microbiological Pa	rameters						
Coliforms, Total		< 1	MAC = 0	1	CFU/100 mL	2024-12-18	
E. coli	January West Advisor	< 1	MAC = 0		CFU/100 mL	2024-12-18	
	7 N. Fraser Drive (24L21	42-03)   Matrix: Wa	ater   Sampled: 202	4-12-17 13:4	10		
Anions Chloride		9.02	AO < 250	0.10	ma/l	2024 12 10	
Nitrate (as N)		8.02 0.050	AO ≤ 250 MAC = 10	0.10	mg/L	2024-12-19 2024-12-19	
Nitrite (as N)		< 0.010	MAC = 1	0.010		2024-12-19	
Field Parameters							
Temperature, field		7.5	AO ≤ 15		°C	2024-12-17	
	rameters						
Microbiological Pa	ACKARING.		MAC = 0	1	CFU/100 mL	2024-12-18	
Microbiological Pa		< 1			01 01 100 IIIL	LULT 12-10	
Microbiological Pa Coliforms, Total		< 1 < 1			CFU/100 mL	2024-12-18	
Microbiological Pa Coliforms, Total E. coli	8 Hilborn Road (24L2142	< 1	MAC = 0	1		2024-12-18	
Microbiological Pa Coliforms, Total E. coli	8 Hilborn Road (24L2142	< 1	MAC = 0	1		2024-12-18	
Microbiological Pa Coliforms, Total E. coli WT# 94E1 - Well	8 Hilborn Road (24L2142	< 1	MAC = 0	1 12-17 14:30		2024-12-18	



REPORTED TO PROJECT

Quesnel, City of

Quarterly Wells

WORK ORDER

24L2142

REPORTED

2024-12-27 09:17

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifie
WT# 94E1 - Well 8 Hilborn Road (24L	.2142-04)   Matrix: Wate	er   Sampled: 2024-	12- <mark>17 14:30</mark>	Continued		
Anions, Continued						
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2024-12-19	
Field Parameters						
Temperature, field	7.2	AO ≤ 15		°C	2024-12-17	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-12-18	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-12-18	
WT# 94DF - Well 9 Carson Sub (24L2 Anions	2142-05)   Matrix: Water	r   Sampled: 2024-1	2-17 11:30			
Chloride	2.32	AO ≤ 250	0.10	mg/L	2024-12-19	
Nitrate (as N)	< 0.010	MAC = 10	0.010		2024-12-19	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2024-12-19	
Field Parameters						
Temperature, field	7.3	AO ≤ 15		°C	2024-12-17	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-12-18	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-12-18	
WT# 28000 - Well 10 Hilborn Road (2	24L2142-06)   Matrix: W	ater   Sampled: 202	24-12-17			
Anions						
Chloride	16.3	AO ≤ 250		mg/L	2024-12-19	
Nitrate (as N)	< 0.010	MAC = 10		mg/L	2024-12-19	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2024-12-19	
Field Parameters						
Temperature, field	7.4	AO ≤ 15		°C	2024-12-17	
Microbiological Parameters						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-12-18	HT4
	<1	MAC = 0		CFU/100 mL	2024-12-18	HT4

The collection date and/or time was not provided. Therefore holding time exceedances cannot be properly identified.

HT4

Sample Qualifiers:



REPORTED TO Quesnel, City of PROJECT Quarterly Wells WORK ORDER

24L2142

REPORTED

2024-12-27 09:17

Analysis Description	Method Ref.	Technique	Accredited	Location
Anions in Water	SM 4110 B (2020)	Ion Chromatography	✓	Kelowna
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	1	Kelowna
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna

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