Regional District of East Kootenay

Annual Water Systems Report

2022

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1. RDEK Water Systems Overview

The Regional District of East Kootenay (RDEK) strives to provide a safe and reliable water supply to all its customers. As required by the Drinking Water Protection Act, this Annual Water Report is intended to inform the public of the water systems owned and operated by the RDEK and provide details on water quality, system maintenance and improvements, water conservation tactics, and more. The RDEK employs certified water operators to ensure system operations comply with regulations set out by the BC Interior Health Authority (IHA).

WATER SYSTEMS	EOCP #	2022 CONNECTIONS
EAST SIDE LAKE WINDERMERE	1926 & 1927 & 1099	1599
HOLLAND CREEK	1866	395
EDGEWATER	649	473
RUSHMERE	1854	37
SPUR VALLEY	2421	73
MOYIE	2742	72
ELKO	2407	62

2. Systems at a Glance

Water System	Source Water	Supply Method	Disinfection/ Treatment Process	Pressure Reducing Stations	Reservoir & Capacity	Hydrants For Fire Protection
East Side Lk Windermere	Lake Windermere	Pumped/ Gravity	Flocculation & Filtration, Chlorine & UV disinfection	8	Concrete 962m^3, 1250m^3 & 1600m^3	Yes
Edgewater	Lake Baptiste	Gravity	Chlorine & UV disinfection	3	Steel 800m^3 & 400m^3	Yes
Holland Creek	Groundwater Well	Pumped/ Gravity	Chlorine disinfection	2	Supplied by Kinbasket Water and Sewer	Yes
Rushmere	Lake Windermere	Pumped	Ultra-filtration and Chlorine disinfection	0	Polyurethane 17m^3	No[1]
Spur Valley	Groundwater Well	Pumped/ Gravity	Chlorine disinfection	0	Concrete 125m^3 & 222m^3	No[2]
Moyie	Groundwater Well	Pumped/ Gravity	No treatment or disinfection	0	Concrete 71m^3	No
Elko	Groundwater Well	Pumped	No treatment or disinfection	0	No storage	No

[1]Fire protection by tender only
[2]Insufficient fire flows through hydrants. Fire Protection by tender only

3. Water Quality Performance

Parameters	Quality Standards	Frequency	Water Systems	Performance
Total Coliform, E.Coli	Less than one E.Coli and total coliform bacteria detectable per 100mL samples	Weekly	East Side Lake Windermere	100%
			Edgewater	100%
			Holland Creek	100%
			Rushmere	100%
			Spur Valley	100%
		Monthly	Moyie	100%
			Elko	100%
Free Chlorine Residual	Free chlorine residual minimum of 0.5mg/L entering the system after no less than 20 minutes contact time. Minimum of 0.2mg/L at any/all end points of the distribution system	Daily	East Side Lake Windermere	100% ≥ 0.5mg/L
		Five days/week	Edgewater	100% ≥ 0.5mg/L
		One day/week	Holland Creek Distribution	100% ≥ 0.5 mg/L
		Three days/week	Rushmere	100% ≥ 0.5 mg/L
			Spur Valley	100% ≥ 0.5mg/L
Turbidity	Disinfected water shall not be higher than 1 NTU. Between 1 NTU and under 5 NTU a water quality advisory must be issued. Above 5 NTU a boil water notice is issued.	Daily	East Side Lake Windermere	100% ≤ 1.0 NTU 98.63 < 0.3 NTU
		Five days/week	Edgewater	100% < 5.0 NTU 91.63% ≤ 1.0 NTU[1]
			Holland Creek	100% ≤ 0.3 NTU
		Three days/week	Rushmere	100% ≤ 1.0 NTU 99.37% ≤ 0.3 NTU
			Spur Valley	100% ≤ 0.3 NTU
Total Trihalomethanes	Maximum Allowable Annual Average of 0.1mg/L	Quarterly	East Side Lake Windermere	100%
			Edgewater	75%[2]
			Holland Creek	N/A (Groundwater)
			Rushmere	N/A (Small System)
			Spur Valley	N/A (Groundwater)

Parameters	Quality Standards	Frequency	Water Systems	Performance
Haloacetic Acids	Maximum Allowable Annual Average of 0.08mg/L	Quarterly	East Side Lake Windermere	100%
			Edgewater	100%
			Holland Creek	N/A (Groundwater)
			Rushmere	N/A (small system)
			Spur Valley	N/A (Groundwater)
Edgewater Raw Water Monitoring for Filtration Deferral	E. Coli: <10% of samples may exceed 20/100 in any 6-month period	Weekly	Edgewater	100%
	Total Coliform: <10% of samples may exceed 100/100mL in any 6-month period		Edgewater-Raw Water	47.22%<100/100mL[3]

[1]Turbidity spike at source. See "Edgewater Water System 2022 Events" below.

[2]One THM result of 0.109 in Edgewater therefore flushing increased. Annual average = 0.0593

[3]19/36 untreated raw water samples >100/100ml total coliforms

Please see Appendix A for monthly turbidity, chlorine residual, and consumption data graphed over time for each system.

Please see Appendix B for full spectrum analysis results.

4. Water Systems in Detail

4.1 East Side Lake Windermere Water System:

East Side Lake Windermere's raw water is drawn from Lake Windermere and pumped from the Low Lift Pumping Station to the East Side Lake Windermere Water Treatment Plant (WTP) located on Windermere Loop Road. It passes through coagulation, flocculation, settling and filtration treatment stages and the filtered water is then disinfected using UV and chlorine before being fed to the reservoir and distribution system. The entire process is monitored via Supervisory Control and Data Acquisition (SCADA) instrumentation and auto-dialer alarms as well as being verified and documented by operators daily. The Windermere water distribution system is part of the East Side Lake Windermere Water System.

2022 Events and System improvements:

- UV repairs and bulbs replaced at Water Treatment Plant
- Maintenance on Low Lift Pumping Station pumps
- Replaced turbidity analyzers at Water Treatment Plant
- Leak detection conducted in parts of Timber Ridge and Windermere
- Installed fiber optics to resolve communication error issues
- AWI upgrade to water treatment trains has commenced
- Back-up generator serviced

2023 Plans:

- Clean Adsorption Clarifier beads and air diffusers as part of upgrades
- Upgrade Water Treatment Plant Filter Underdrains to maximize plant performance and water quality
- SCADA upgrades
- Service Pressure Reducing Valves
- Continue with leak detection
- Timber Ridge main replacement

4.2 Edgewater Water System:

The source water intake for Edgewater is located at Baptiste Lake, approximately two kilometers southeast of the community. Edgewater water is disinfected with both UV and chlorine and is stored at the Hewitt Road reservoirs, which provide 1200m^3 of treated storage. The RDEK has the capability to fully monitor the entire process through Edgewater's SCADA system, which alerts the operators of any potential problems.

2022 Events and System Improvements:

- Replace failed Program Logic Controller components and SCADA upgrades
- Repairs to UV system and bulbs replaced at water treatment plant
- Inspected siphon line from Baptiste
- Water Quality Advisory implemented from April – July due to excess turbidity in Macaulay Creek & Baptiste Lake
- EID shop decommissioned
- Weir cleaned at Baptiste Reservoir

2023 Plans:

- Clean reservoirs
- Hewitt Pressure Reducing Valve repair
- Siphon Line weed control & brush clearing
- Intake screen to be cleaned and lifted in Baptiste Lake

4.3 Holland Creek Water System:

Kinbasket Water & Sewer Company (KWSC) supplies the community with bulk potable water. The well-sourced water is chlorinated to protect against contamination within the distribution system. The Holland Creek distribution system has no reservoirs – all storage is provided by KWSC.

2022 Events and System Improvements:

- Service Area expanded to include PrairieWind site on Athalmer

2023 Plans:

- Installation of Pressure Reducing Valve for Athalmer (PrairieWind)

4.4 Rushmere Water System:

The Rushmere Water System draws raw water from Lake Windermere and is treated by way of a small membrane filtration treatment plant. Treated water is stored within the plant and pumped to the community using two variable frequency-drive distribution pumps. The plant is highly automated and operators maintain remote monitoring and control capability via SCADA. The plant is attended a minimum of 3 times per week and can alert staff when problems occur. The Rushmere Water System is used primarily for domestic purposes with some lawn and garden irrigation. There is no fire protection via fire hydrants.

2022 Events and System Improvements:

- Replaced distribution check valves due to failure
- SCADA upgrades
- New door locks installed
- Clean in Place of membrane filters completed
- Removal of non-functioning water tank

2023 Plans:

- Lake intake cleaning
- SCADA Upgrades
- Check valve replacement
- Install new water tank
- Clean membrane filters (Clean in Place)

4.5 Spur Valley Water System:

The community of Spur Valley is supplied with water from a groundwater well situated just south of the community. The water is chlorinated as it leaves the well and then pumped to two reservoirs before being distributed to residents. The RDEK has the capability to monitor the entire process through Spur Valley's SCADA system, which alerts the operators of any potential problems. Operators are on site a minimum of 3 times per week.

2022 Events and System Improvements:

- Conducted leak detection and no major leaks discovered

2023 Plans:

- Continue with leak detection
- New well pump
- Repair possible leak on Szabo Road

4.6 Moyie Water System:

Moyie water is pumped from a groundwater well to a reservoir that maintains the pressure in the distribution system. The water is not chlorinated. RDEK operators are on site twice per week to ensure proper operation and perform monthly bacteriological sampling. The pumphouse is also outfitted with automatic alarm dialers to alert operators of any problems.

2022 Events and System Improvements:

- Major leak repaired
- Failed service line to residence detected and repaired
- Well shock chlorinated and flushed

2023 Plans:

- Valve repair at reservoir
- Relocate blow-off
- Remove dead trees at pumphouse

4.7 Elko Water System:

The community of Elko receives raw water from a well located near the pumphouse. The well is located in a confined aquifer and water is pumped directly to the distribution system. Because there is no storage reservoir in Elko, the water system relies solely on the continuous operation of the pump to maintain pressure and keep up with demand. There is no chlorination in Elko.

RDEK operators are on site 2 times per week to ensure proper operation and perform bacteriological sampling monthly as required. The pumphouse is also outfitted with automatic alarm dialers to alert staff when regular operations are compromised.

2022 Events and System Improvements:

- Hydro Pole at pumphouse replaced (April)
- Unknown spike in consumption (Mar-Apr)
- Increased demand August 10-28 due to temporary 150 (approx.) person BC Wildfire forest fire fighters camp beside community hall.
- Well shock chlorinated and flushed

2023 Plans:

- Pressure tank and exhaust fan replacement (pumphouse)
- Install VFD failure alarm
- Weed control

5. Operator Certification

EOCP Certifications		
Employee	**Certification #**	**Level**
Krista Goodman	7969	WT-II, WD-II, MWWT-II, WWC-I, CH
Forrest Manser	1001141	WT-III, WD-II, MWWT-III, WWC-II, CH
Jim Ralph	3389	WT-III, WD-III, MWWT-II, WC-I, CH
Hailey Kuhn	1000789	WT-MUII, WD-MU1, MWWT-I
Aaron Bose	9550	WT-I, WD – I, MWWT - II
Dave Berger	7040	SWS
Brian De Paoli	8973	SWS
Jeff Nicolajsen	141754	SWS
Jongsun Park	1001451	WT-I, CH
Tom Altmann	1000038	SWS, SSS, CH

- WT: Water Treatment
- WD: Water Distribution
- MWWT: Municipal Wastewater Treatment
- WWC: Wastewater Collection
- CH: Chlorine Handling
- SWS: Small Water Systems
- SSS: Small Sewer Systems
- MU: Multi Utility

6. Water Conservation

The RDEK has several components to its water conservation strategy. We have adopted scheduled watering hours for most of the RDEK owned and operated water systems (see examples below). We encourage the use of low-flow fixtures in new construction. Our operators diligently monitor our systems for problems and routinely check for unaccounted-for consumption like leaks or unmetered use.

7. Water Treatment Objectives

The Canadian Drinking Water Guidelines, developed by Health Canada, are designed to protect the health of community members and those most vulnerable: children, the elderly, and individuals with compromised immune systems. The parameters set out in those guidelines are the performance goals every water system should strive to achieve to provide the cleanest, safest and most reliable drinking water possible.

A Maximum Acceptable Concentration (MAC) level has been established by Health Canada for microbiological criteria. Each MAC has been designed to safeguard health, assuming a lifelong consumption of drinking water containing the substances at the maximum concentration level.

Aesthetic Objectives (AO) apply to characteristics of drinking water that can affect its acceptance by consumers. These would include such criteria as taste, odour, and appearance. Some AOs like turbidity could pose a health risk to some at-risk consumers if the MAC levels are exceeded.

In the East Kootenay, IHA acts as the water quality regulator by issuing Operating Permits and placing conditions on those permits. Those conditions are generally found in the BC Drinking Water Protection Act and the Canadian Drinking Water Guidelines.

IHA employs the 4-3-2-1-0 treatment objectives to ensure water-borne illnesses are not jeopardizing the public's health:

Based on Canadian Drinking Water Quality Guidelines:

- 4 log (99.99%) inactivation of viruses
- 3 log (99.9%) inactivation of or removal of Giardia and Cryptosporidium
- 2 treatment processes for surface water (typically this includes filtration and disinfection)
- 1 for <1 Nephelometric Turbidity Units (NTU) of turbidity (with a target of 0.1 NTU)
- 0 fecal coliform and E. coli

8. Water Quality Monitoring

Monitoring programs are established as required by IHA regulations, the water system's Operating Permit, and the Drinking Water Officer. Bacteriological testing is a major requirement and is performed routinely in every RDEK water system. Samples are submitted to an approved lab where they are tested for total coliform and E. coli bacteria.

Coliforms:

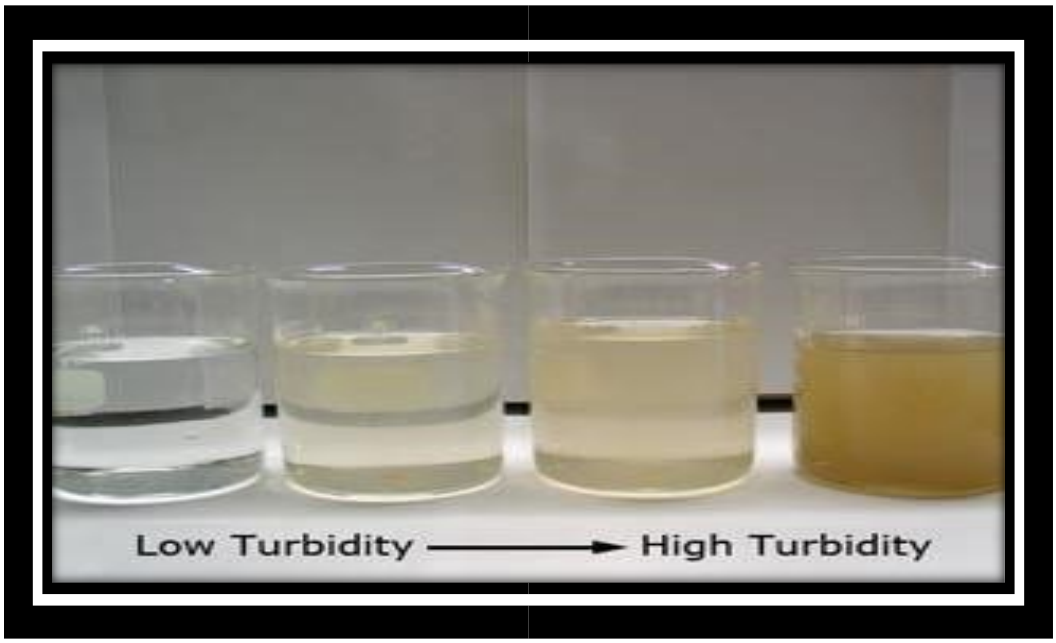
The presence of total coliforms in the water system is an indicator that the system is experiencing a regrowth of pathogens, that infiltration has occurred, or that it has not been properly treated at the source. It is an indication that the potential exists for bacteria to cause adverse health effects. The MAC for total coliform in all RDEK operated water systems is 0 per 100ml. If a sample comes back positive for coliform, operators review sampling practices, system operations anomalies, and a resample is conducted. If that result is positive, the main is flushed, monitored, and tested again. If the third result is positive, the main is taken out of service, chlorinated, flushed, and remains out of service until acceptable results are obtained.

E. coli:

Escherichia coli is one species in the fecal coliform group and is a definite indicator of the presence of feces in the distribution system. The MAC for E. coli is 0 per 100 ml. An unacceptable MAC test for E. coli triggers an immediate boil water order by the Medical Health Officer, which remains in effect until the problem is identified, isolated, resolved, and acceptable test results are obtained.

Turbidity:

Turbidity is a measure of water clarity. Turbid water can look cloudy or opaque and can also affect the colour of the water. Turbidity is measured in Nephelometric Turbidity Units, or NTU. The instrument used for measuring is called nephelometer or turbidimeter, which measures the intensity of light scattered at 90 degrees as a beam of light passes through a water sample.



For all its surface-sourced water systems, the RDEK monitors turbidity with continuous monitoring instrumentation and verifies values with daily grab samples, using this as a basis for determining general water quality. Water quality advisories are issued when turbidity levels are greater than 1 NTU. Boil water notices are issued at or above 5 NTU. Depending on the treatment system, Health Canada recommends different turbidity level objectives; however, if it is above 1 NTU, a water quality advisory is issued.

Chlorine Disinfection:

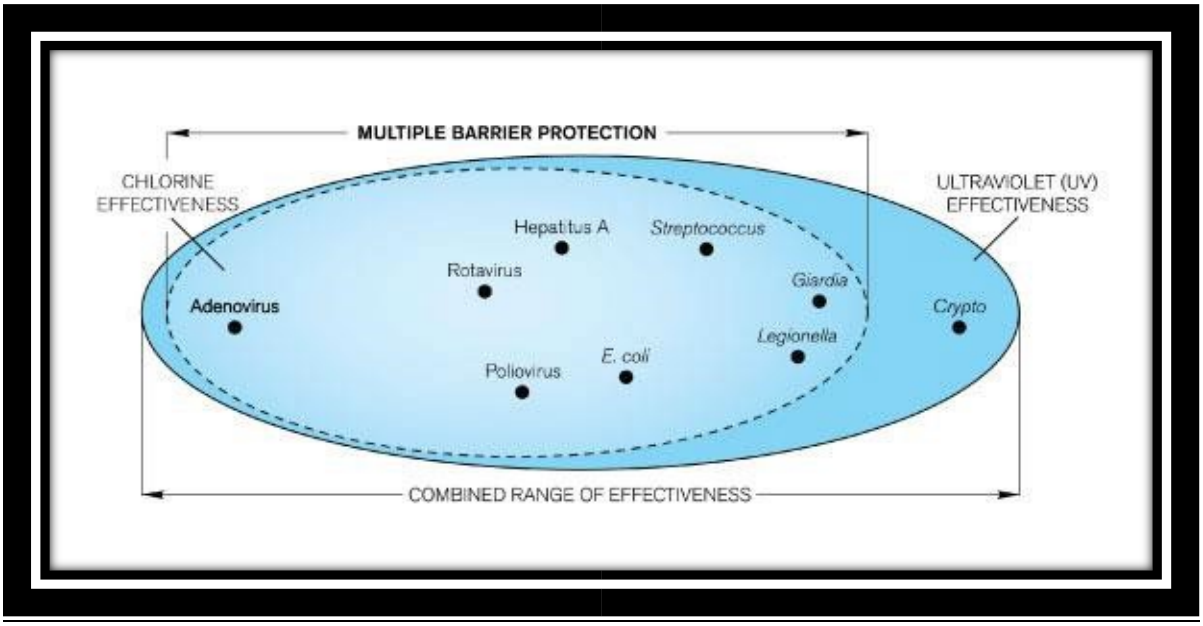
Most RDEK water systems use chlorine to disinfect the water prior to sending it through the distribution system. Maintaining free chlorine residual in all parts of the system is important in keeping the water safe from bacteriological growth and other disease-causing organisms.

To ensure adequate chlorine levels exist, the RDEK has several online chlorine analyzers that monitor residuals and will alert an operator should a residual fall below a desired point. Testing at remote points of distribution systems is also done routinely.

Ultraviolet Light Disinfection:

Ultraviolet light (UV) destroys harmful organisms by causing a molecular change in their DNA makeup that prevents them from multiplying. This process destroys the ability of the organism to spread disease. When pathogens cannot multiply, they are no longer considered to be harmful.

UV is often used in conjunction with chlorination for added protection and to combat organisms such as cryptosporidium. Cryptosporidium is a chlorine-resistant protozoan, but it can easily be inactivated by UV. Another advantage of UV disinfection is that it does not produce any disinfection byproducts. The East Side Lake Windermere and Edgewater water systems are equipped with UV disinfection systems.



Disinfection Byproducts:

Disinfection byproducts are formed when disinfectants used in water treatment react with bromide and/or natural organic matter (i.e., decaying vegetation) present in the source water. Different disinfectants produce different types or amounts of disinfection byproducts. Disinfection byproducts, for which MAC's have been established, have been identified in drinking water, including trihalomethanes and haloacetic acids.

- Trihalomethanes (THM) are a group of four chemicals that are formed along with other disinfection byproducts when chlorine or other disinfectants used to control microbial contaminants in drinking water react with naturally occurring organic and inorganic matter in water. The THMs are chloroform, bromodichloromethane, dibromochloromethane, and bromoform. The Canadian Drinking Water Guidelines have established a MAC to regulate total THMs (TTHM) at a maximum allowable annual average level of 0.1mg/L.

- Haloacetic Acids (HAA) are a group of chemicals that are formed along with other disinfection byproducts when chlorine or other disinfectants used to control microbial contaminants in drinking water react with naturally occurring organic and inorganic matter in water. The Canadian Drinking Water Guidelines has established the MAC for haloacetic acids at 0.08 mg/L based on a location's running annual average of quarterly samples taken in the distribution system.

The RDEK samples for both THMs and HAAs on a quarterly basis[1]. Of these samples, there was one result exceeding the Canadian Drinking Water thresholds for THMs in Edgewater in 2022. RDEK operators increased the frequency of distribution system flushing to further reduce THMs and continue to monitor the situation closely. All other tests met the required thresholds.

For more information on specific water quality parameters please contact the RDEK or visit *The Province of BC's Ministry of Health* website to find the *Drinking Water Protection Act* and *Regulation* https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/drinking-water-quality/legislation or the Health Canada website to find the *Guidelines for Canadian Drinking Water Quality*. https://www.canada.ca/en/health-canada/services/environmental-workplace-health/water-quality/drinking-water/canadian-drinking-water-guidelines.html

[1]As per IHA standards, Spur Valley, Moyie, Elko, and Holland Creek are groundwater-sourced systems and do not require THM or HAA testing.

Filtration:

Filtration is part of the treatment process in the Rushmere and East Side Lake Windermere water systems. In Rushmere, filtration is performed by an ultra-filter cartridge system.

The filtration system for East Side Lake Windermere consists of the following steps:

- Coagulation: Polyaluminum Chloride, a primary coagulant, is used to destabilize colloidal (particles that do not settle out) substances.
- Flocculation: A polymer is added to clump the destabilized particles together into aggregates that can be more easily separated from the water.
- Settling: The water is sent through up-flow tube settlers, slowing down the flow to allow the floc to settle. This first step removes the majority of the solids.
- Filtration: The water is passed through a mixed-media adsorption clarifier, which removes non-settleable solids using buoyant media. The final filtration process removes any remaining solids creating a very low turbidity product.
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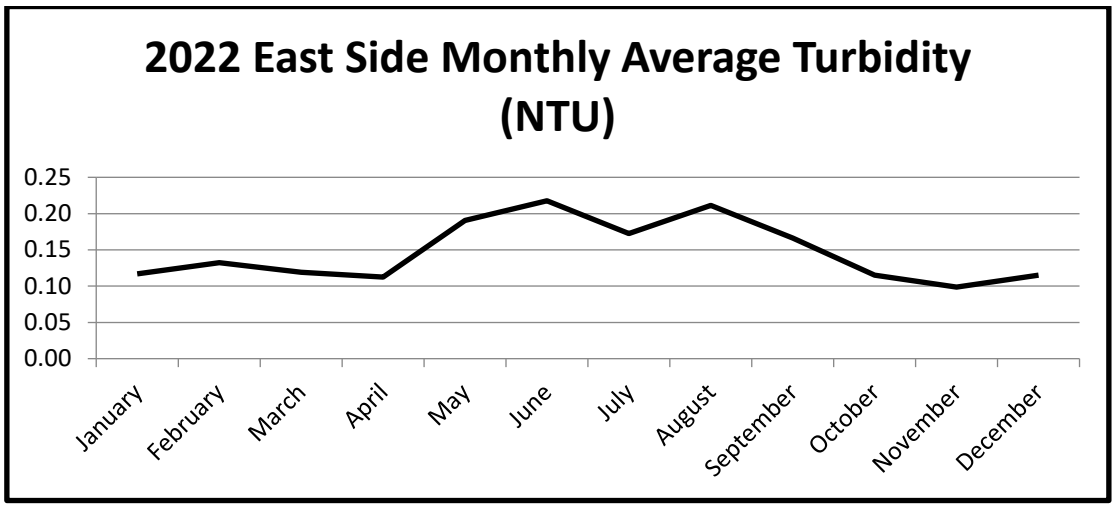
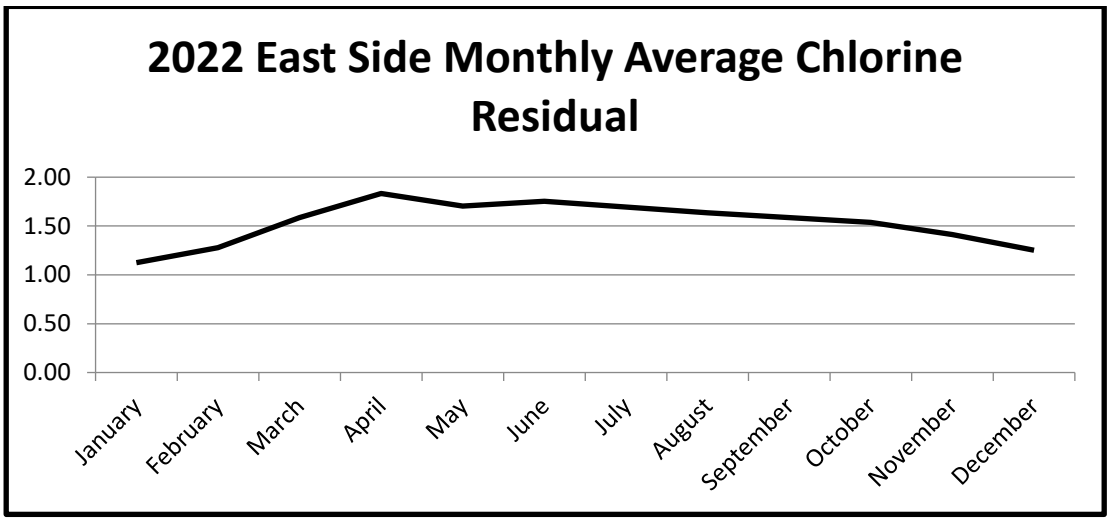
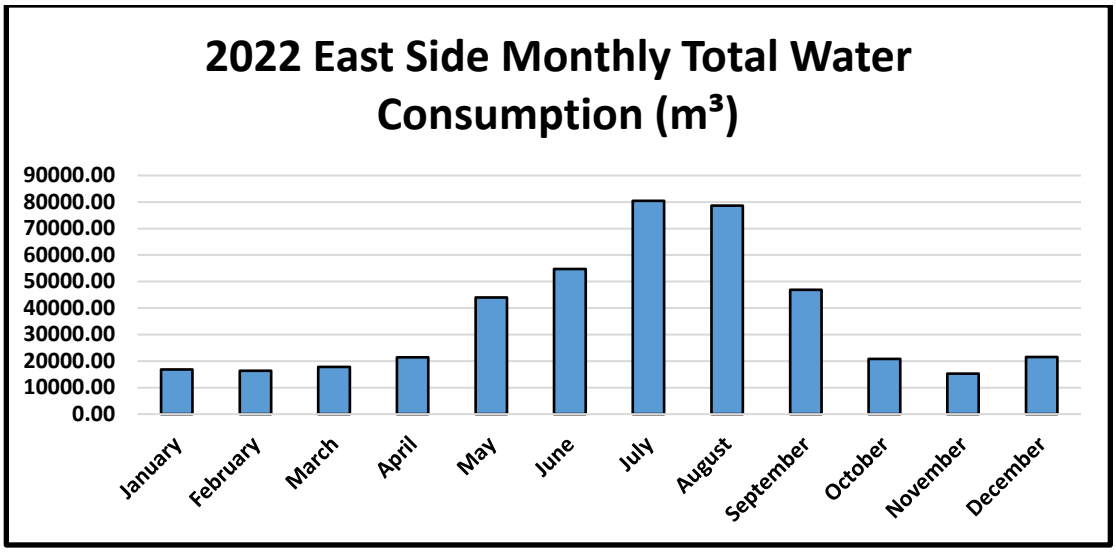
Summary

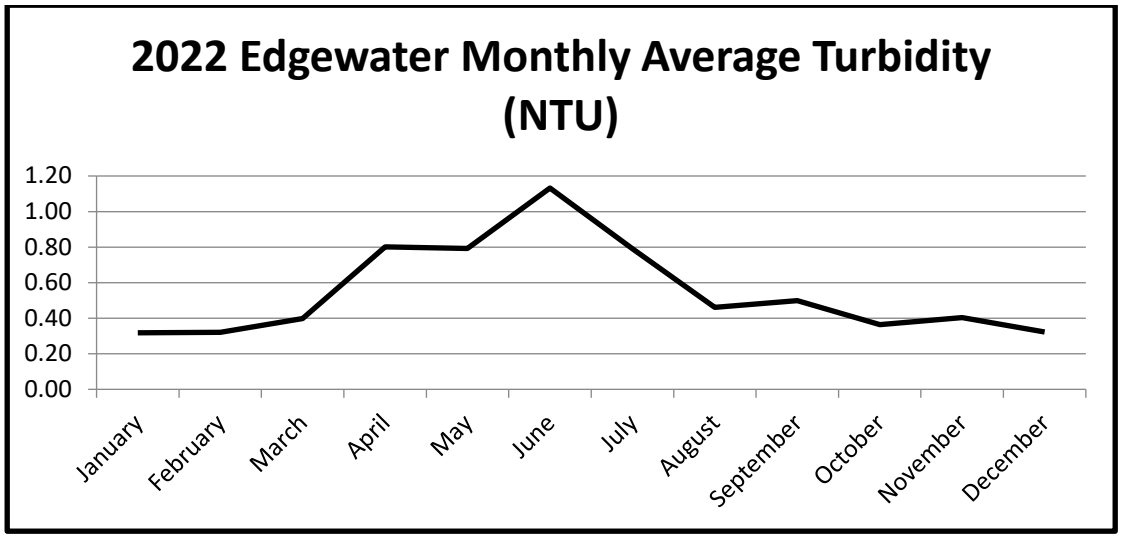
The RDEK is committed to providing safe, potable water to the public by working with IHA and maintaining standards set by Canadian Drinking Water Guidelines. This report represents a way of communicating facts and keeping the public apprised of the operational processes of the RDEK's water systems in the East Kootenay.

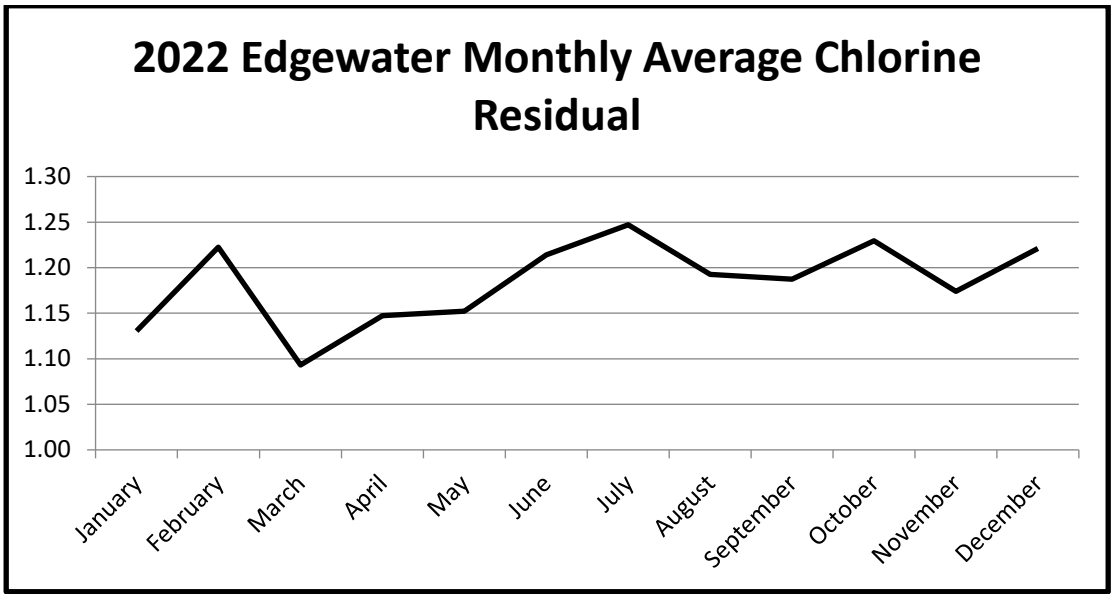
Appendix A: Monitoring Data

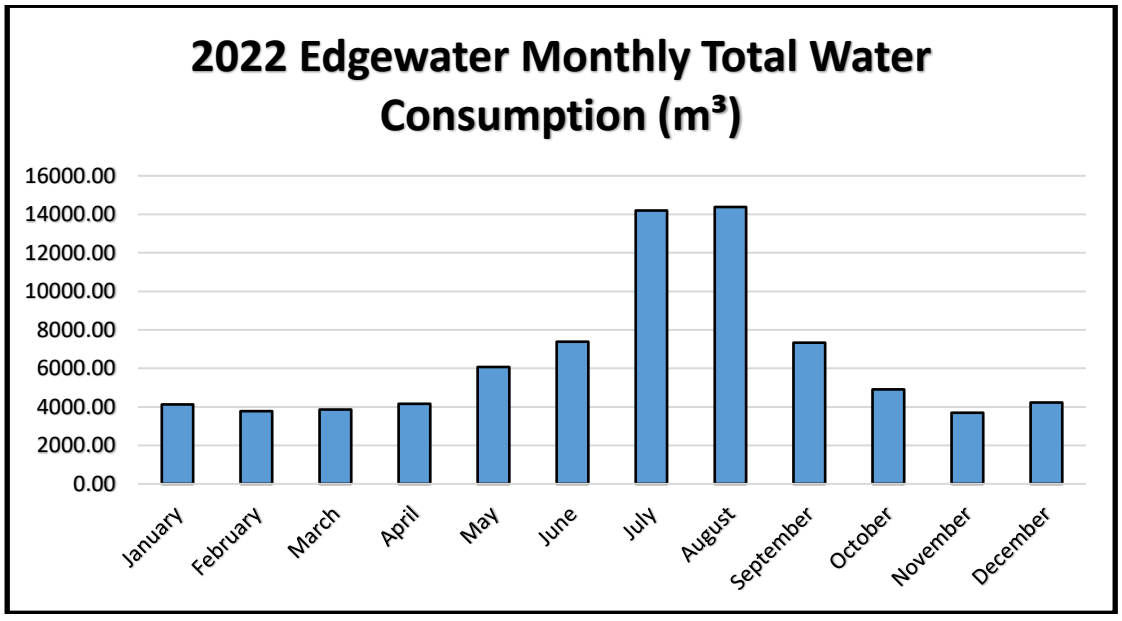


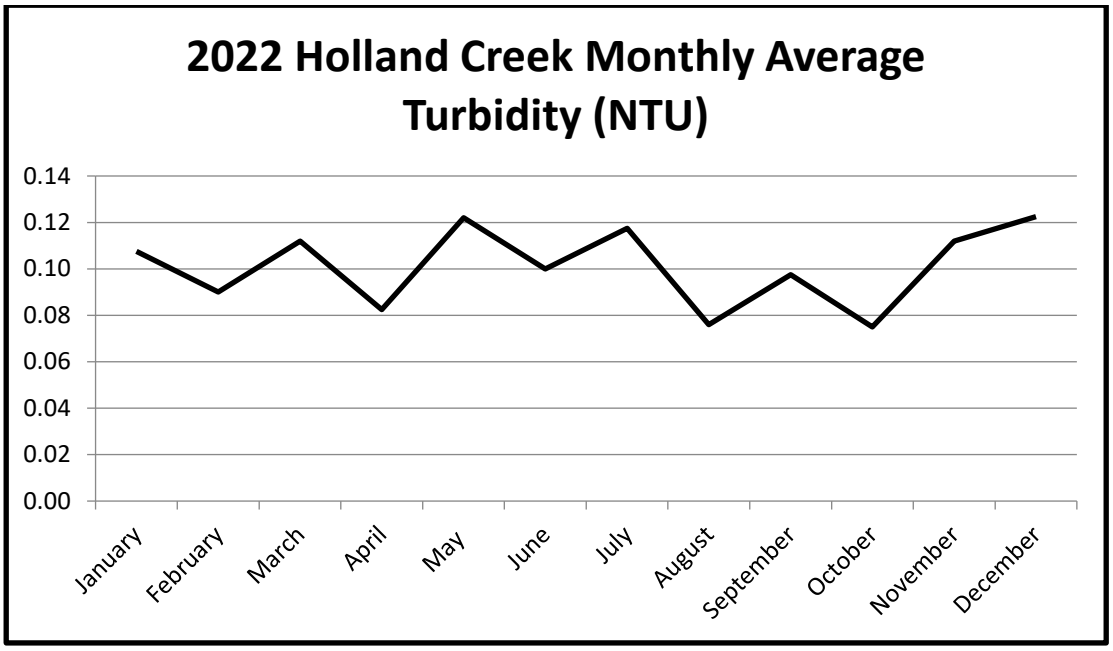





2022 Edgewater Monthly Average Turbidity (NTU)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
January
February
March
April
May
June
July
August
September
October
November
December


2022 Edgewater Monthly Average Chlorine Residual
1.30
1.25
1.20
1.15
1.10
1.05
1.00
January
February
March
April
May
June
July
August
September
October
November
December


2022 Edgewater Monthly Total Water Consumption (m³)
16000.00
14000.00
12000.00
10000.00
8000.00
6000.00
4000.00
2000.00
0.00
January
February
March
April
May
June
July
August
September
October
November
December


2022 Holland Creek Monthly Average Turbidity (NTU)
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
January
February
March
April
May
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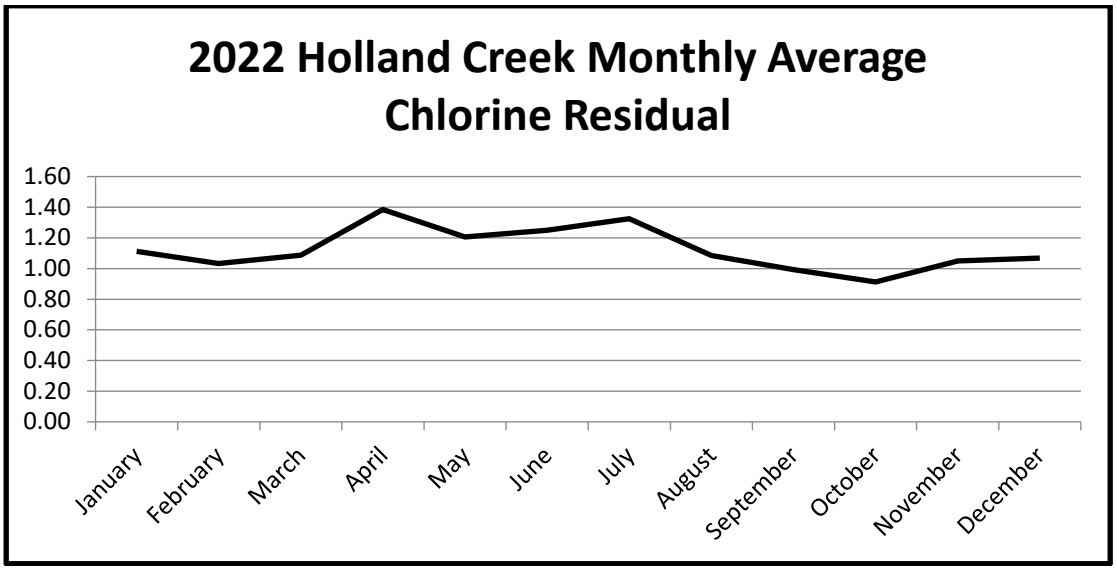
2022 Holland Creek Monthly Average Chlorine Residual
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
January
February
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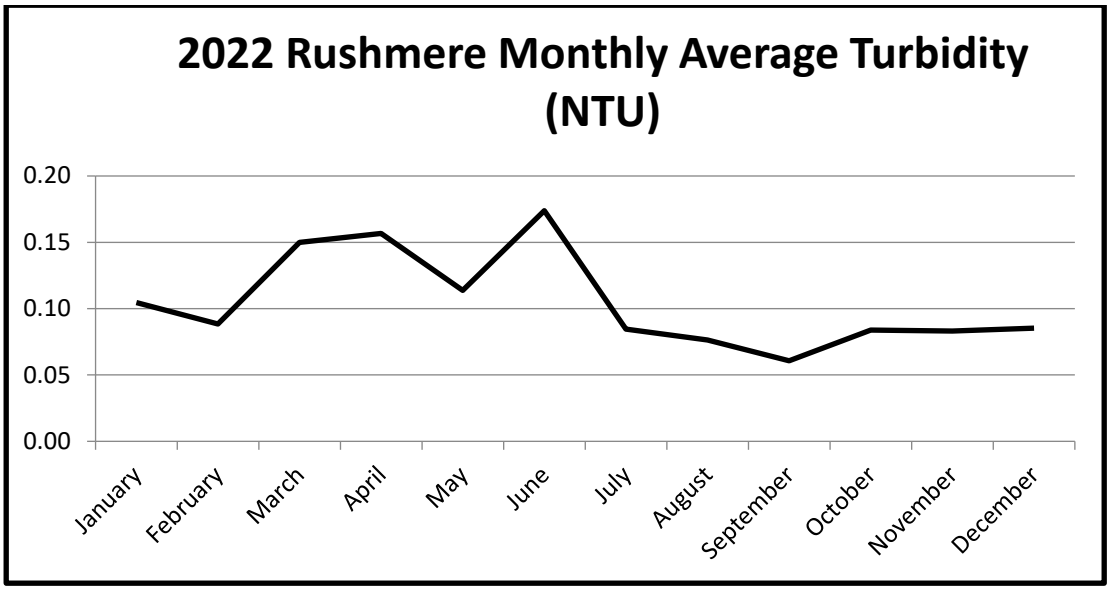
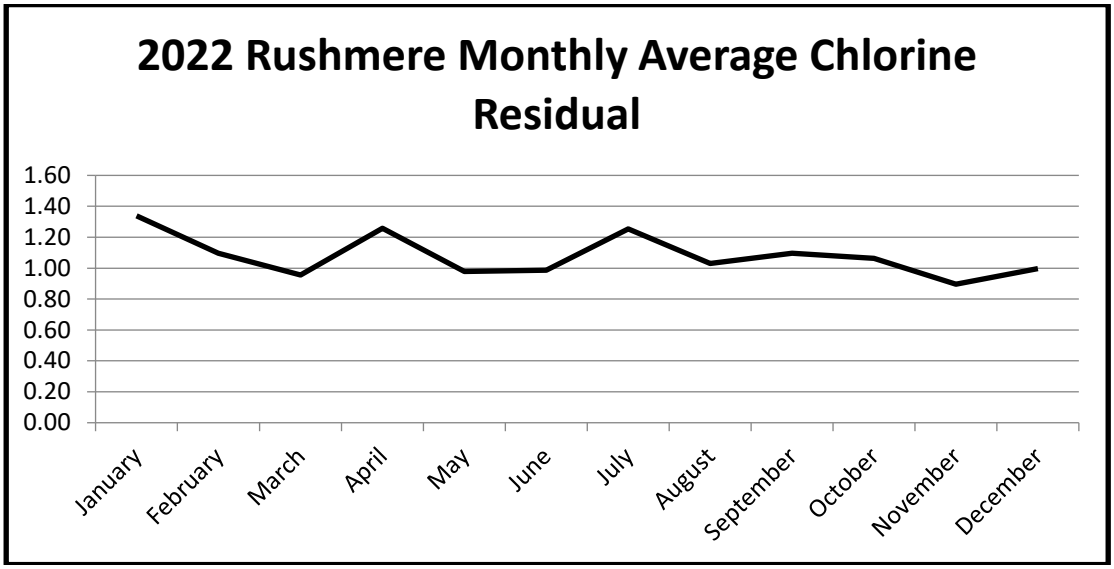

2022 Rushmere Monthly Average Turbidity (NTU)
0.20
0.15
0.10
0.05
0.00
January
February
March
April
May
June
July
August
September
October
November
December


2022 Rushmere Monthly Average Chlorine Residual
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
January
February
March
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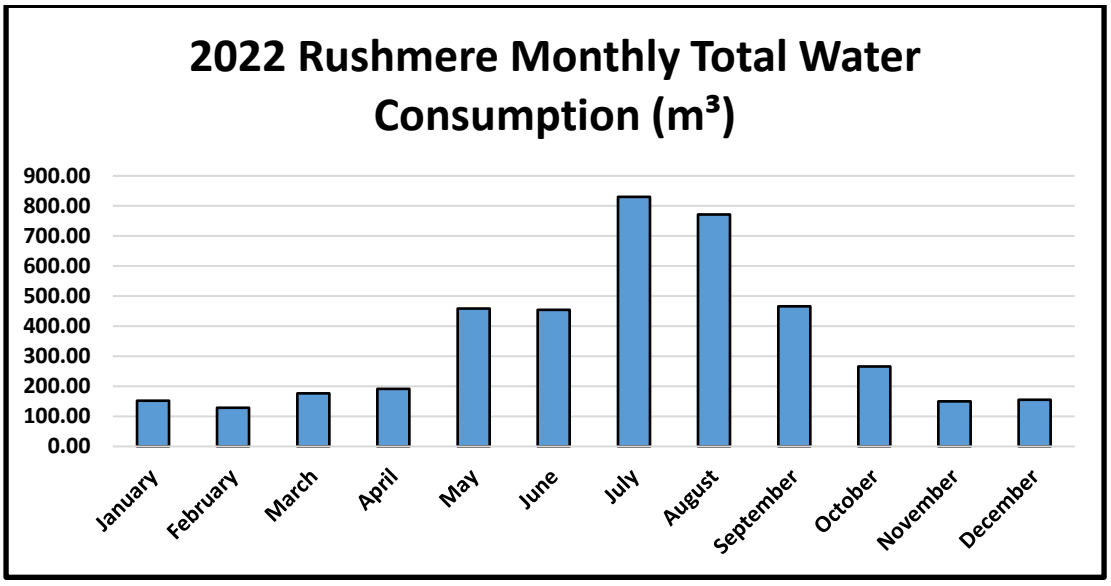
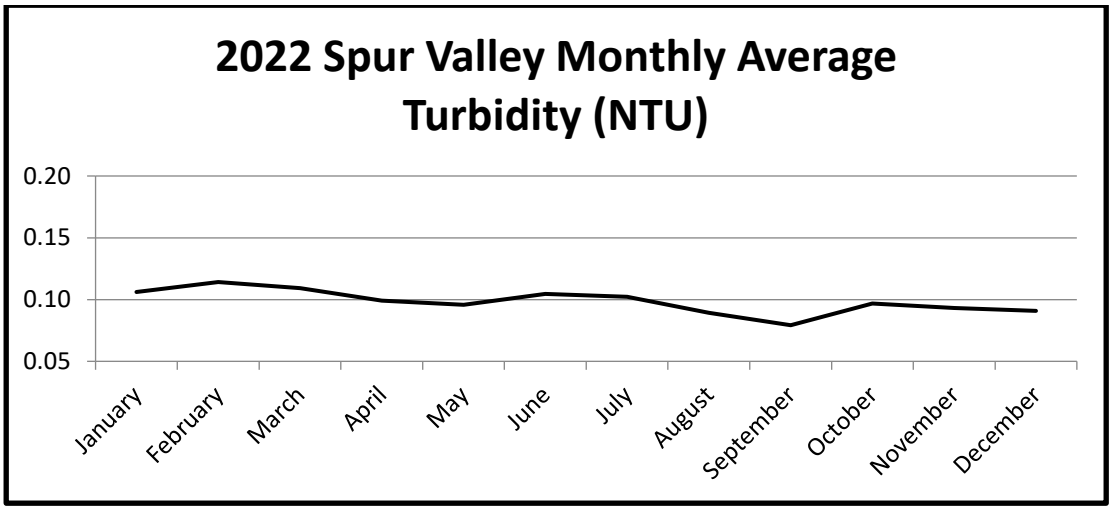
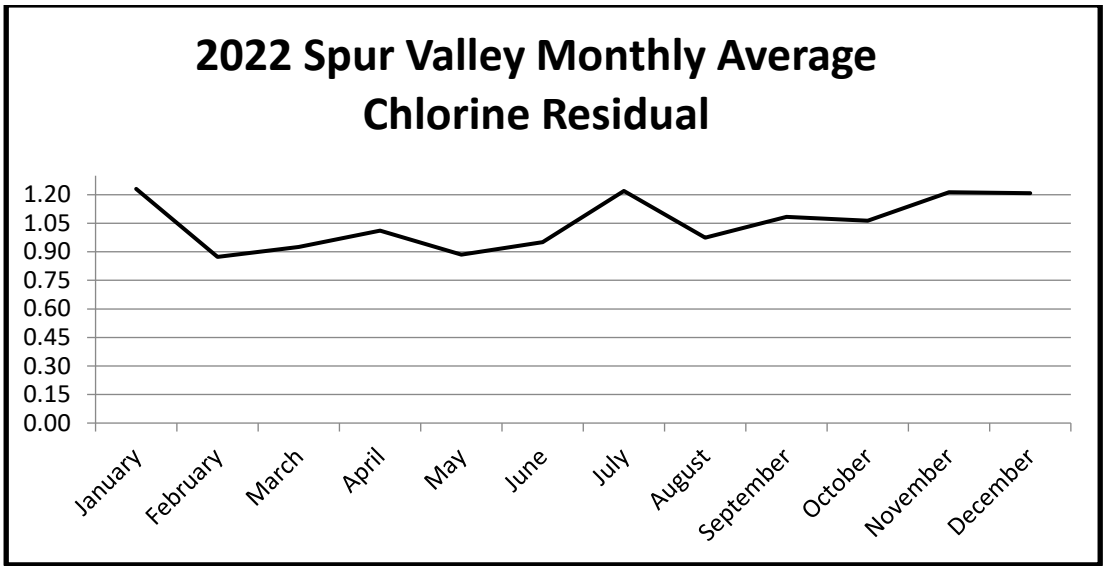
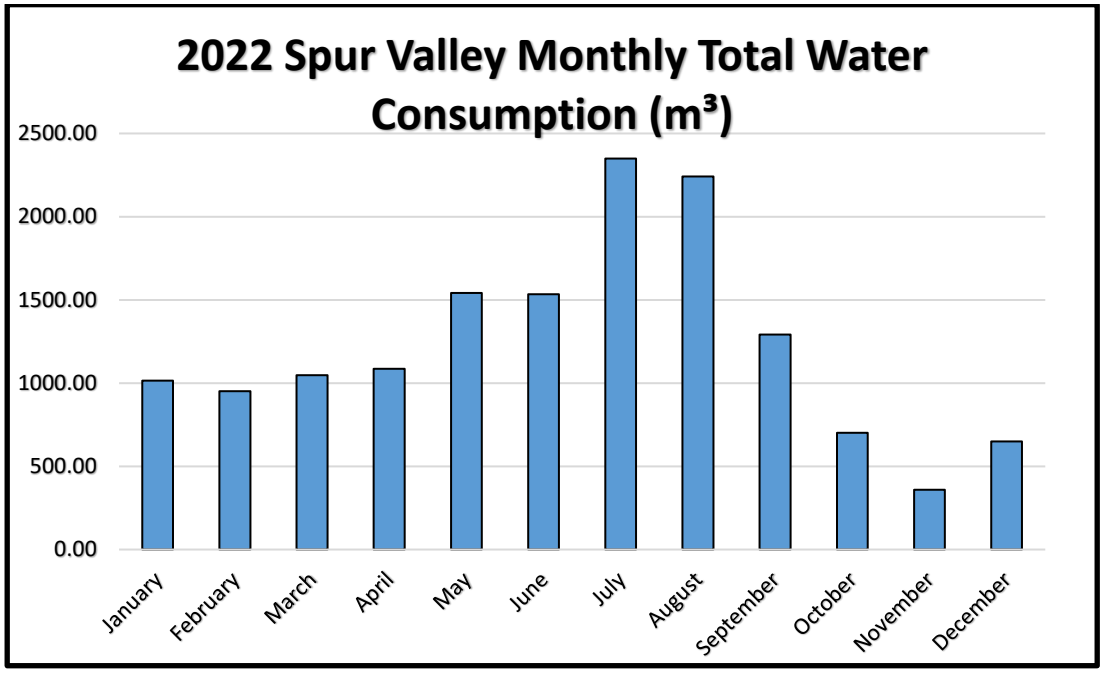
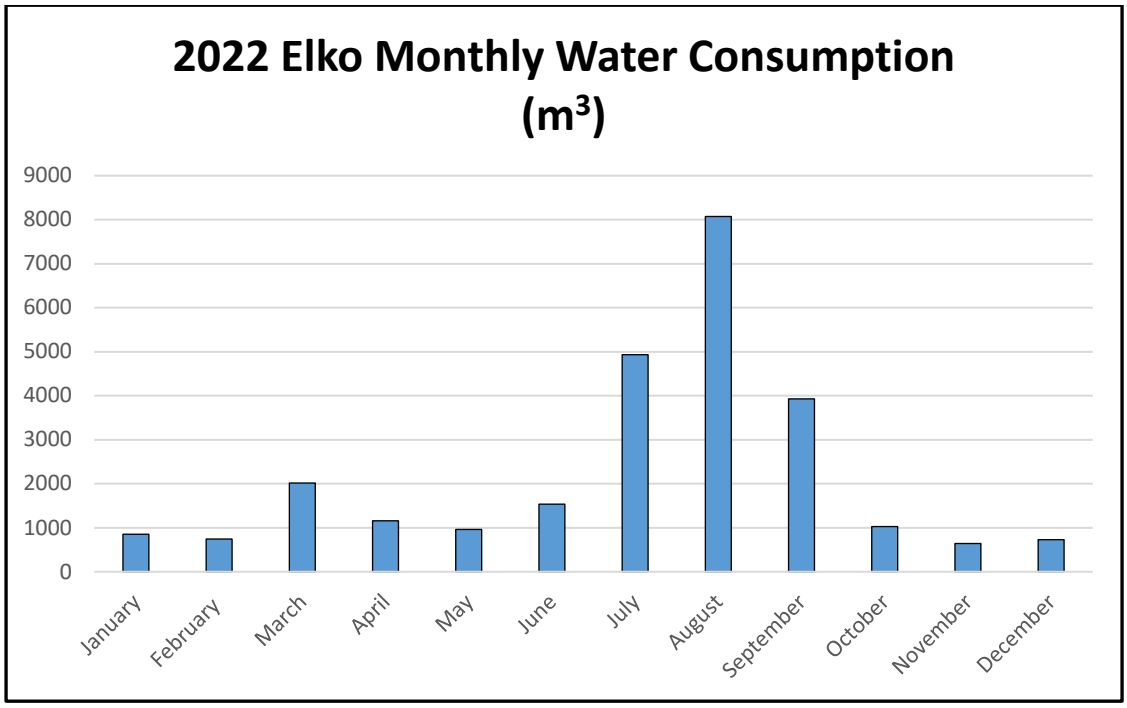
October
November
December

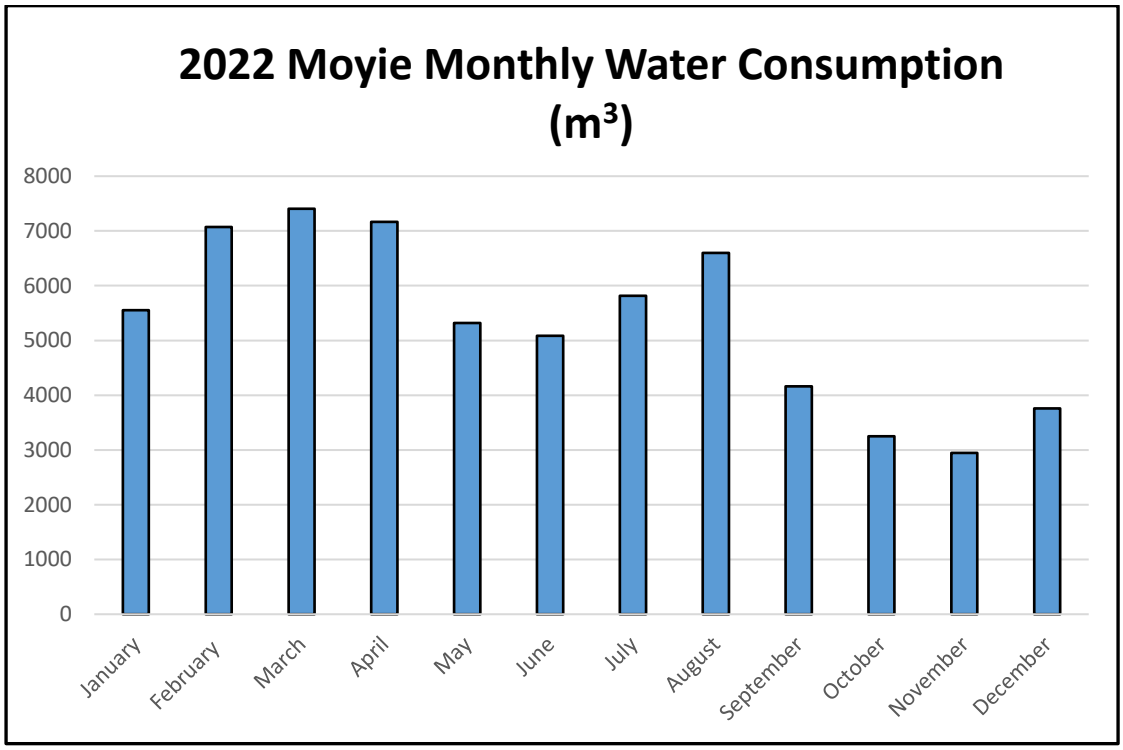

2022 Rushmere Monthly Total Water Consumption (m³)
900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
January
February
March
April
May
June
July
August
September
October
November
December


2022 Spur Valley Monthly Average Turbidity (NTU)
0.20
0.15
0.10
0.05
January
February
March
April
May
June
July
August
September
October
November
December


2022 Spur Valley Monthly Average Chlorine Residual
1.20
1.05
0.90
0.75
0.60
0.45
0.30
0.15
0.00
January
February
March
April
May
June
July
August
September
October
November
December


2022 Spur Valley Monthly Total Water Consumption (m³)
2500.00
2000.00
1500.00
1000.00
500.00
0.00
January
February
March
April
May
June
July
August
September
October
November
December


2022 Elko Monthly Water Consumption (m³)
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
January
February
March
April
May
June
July
August
September
October
November
December


2022 Moyie Monthly Water Consumption (m³)
8000
7000
6000
5000
4000
3000
2000
1000
0
January
February
March
April
May
June
July
August
September
October
November
December

Appendix B: Full Spectrum Analysis Data

CARO Certificate of Analysis – sampled Aug. 30, 2022
East Side Water Treatment Plant
East Side High Lift Pump Station RAW*
Holland Creek Recreation Centre
Spur Valley Water System
Edgewater – Edgewater Improvement District (EID) Office
Edgewater Towers RAW**

CARO Certificate of Analysis – sampled Oct. 25, 2022
Moyie Community Water System

ALS Environmental Certificate of Analysis – sampled Aug. 22, 2022
Teck Coal Limited Regional Effects Program

*Raw water direct from Lake Windermere prior to treatment.
**Raw water direct from Lake Baptiste prior to treatment.

CERTIFICATE OF ANALYSIS

REPORTED TO	Regional District of East Kootenay 1164 Windermere Loop Rd Invermere, BC V0A 1K3		
ATTENTION	Brian Funke	**WORK ORDER**	22H4536
PO NUMBER		**RECEIVED / TEMP**	2022-08-31 13:15 / 14.8°C
PROJECT	Full Spectrum Report	**REPORTED**	2022-09-13 17:56
PROJECT INFO		**COC NUMBER**	B93631

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

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.

We've Got Chemistry

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.

Ahead of the Curve

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

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22H4536
PROJECT	Full Spectrum Report	**REPORTED**	2022-09-13 17:56

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
East Side WTP (22H4536-01) | Matrix: Water | Sampled: 2022-08-30 10:30						
Anions						
Chloride	**6.12**	AO ≤ 250	0.10	mg/L	2022-09-02	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	2022-09-02	
Nitrate (as N)	**0.013**	MAC = 10	0.010	mg/L	2022-09-02	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-09-02	
Sulfate	**24.9**	AO ≤ 500	1.0	mg/L	2022-09-02	
Calculated Parameters						
Hardness, Total (as CaCO3)	**127**	None Required	0.500	mg/L	N/A	
General Parameters						
Alkalinity, Total (as CaCO3)	**139**	N/A	1.0	mg/L	2022-09-05	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-09-05	
Alkalinity, Bicarbonate (as CaCO3)	**139**	N/A	1.0	mg/L	2022-09-05	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-09-05	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-09-05	
Carbon, Total Organic	**1.38**	N/A	0.50	mg/L	2022-09-02	
Solids, Total Dissolved	**160**	AO ≤ 500	15	mg/L	2022-09-06	HT1
Solids, Total Suspended	< 2.0	N/A	2.0	mg/L	2022-09-06	
Total Metals						
Aluminum, total	**0.358**	OG < 0.1	0.0050	mg/L	2022-09-04	
Antimony, total	< 0.00020	MAC = 0.006	0.00020	mg/L	2022-09-04	
Arsenic, total	**0.00107**	MAC = 0.01	0.00050	mg/L	2022-09-04	
Barium, total	**0.0622**	MAC = 2	0.0050	mg/L	2022-09-04	
Beryllium, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Bismuth, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Boron, total	< 0.0500	MAC = 5	0.0500	mg/L	2022-09-04	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010	mg/L	2022-09-04	
Calcium, total	**28.6**	None Required	0.20	mg/L	2022-09-04	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2022-09-04	
Cobalt, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Copper, total	**0.00043**	MAC = 2	0.00040	mg/L	2022-09-04	
Iron, total	< 0.010	AO ≤ 0.3	0.010	mg/L	2022-09-04	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2022-09-04	
Lithium, total	**0.00160**	N/A	0.00010	mg/L	2022-09-04	
Magnesium, total	**13.6**	None Required	0.010	mg/L	2022-09-04	
Manganese, total	**0.00186**	MAC = 0.12	0.00020	mg/L	2022-09-04	
Molybdenum, total	**0.00064**	N/A	0.00010	mg/L	2022-09-04	
Nickel, total	< 0.00040	N/A	0.00040	mg/L	2022-09-04	
Phosphorus, total	< 0.050	N/A	0.050	mg/L	2022-09-04	
Potassium, total	**0.52**	N/A	0.10	mg/L	2022-09-04	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2022-09-04	
Silicon, total	**2.9**	N/A	1.0	mg/L	2022-09-04	
Silver, total	< 0.000050	None Required	0.000050	mg/L	2022-09-04	

TEST RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22H4536
PROJECT	Full Spectrum Report	**REPORTED**	2022-09-13 17:56

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
East Side WTP (22H4536-01) | Matrix: Water | Sampled: 2022-08-30 10:30, Continued						
Total Metals, Continued						
Sodium, total	**4.16**	AO ≤ 200	0.10	mg/L	2022-09-04	
Strontium, total	**0.129**	MAC = 7	0.0010	mg/L	2022-09-04	
Sulfur, total	**8.4**	N/A	3.0	mg/L	2022-09-04	
Tellurium, total	< 0.00050	N/A	0.00050	mg/L	2022-09-04	
Thallium, total	< 0.000020	N/A	0.000020	mg/L	2022-09-04	
Thorium, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Tin, total	< 0.00020	N/A	0.00020	mg/L	2022-09-04	
Titanium, total	< 0.0050	N/A	0.0050	mg/L	2022-09-04	
Tungsten, total	< 0.0002	N/A	0.0002	mg/L	2022-09-04	
Uranium, total	**0.000719**	MAC = 0.02	0.000020	mg/L	2022-09-04	
Vanadium, total	< 0.0050	N/A	0.0050	mg/L	2022-09-04	
Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2022-09-04	
Zirconium, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Volatile Organic Compounds (VOC)						S03
Benzene	< 0.5	MAC = 5	0.5	µg/L	2022-09-03	
Bromodichloromethane	**3.0**	N/A	1.0	µg/L	2022-09-03	
Bromoform	**4.8**	N/A	1.0	µg/L	2022-09-03	
Carbon tetrachloride	< 0.5	MAC = 2	0.5	µg/L	2022-09-03	
Chlorobenzene	< 1.0	AO ≤ 30	1.0	µg/L	2022-09-03	
Chloroethane	< 2.0	N/A	2.0	µg/L	2022-09-03	
Chloroform	**28.0**	N/A	1.0	µg/L	2022-09-03	
Dibromochloromethane	**1.6**	N/A	1.0	µg/L	2022-09-03	
1,2-Dibromoethane	< 0.3	N/A	0.3	µg/L	2022-09-03	
Dibromomethane	< 1.0	N/A	1.0	µg/L	2022-09-03	
1,2-Dichlorobenzene	< 0.5	AO ≤ 3	0.5	µg/L	2022-09-03	
1,3-Dichlorobenzene	< 1.0	N/A	1.0	µg/L	2022-09-03	
1,4-Dichlorobenzene	< 1.0	AO ≤ 1	1.0	µg/L	2022-09-03	
1,1-Dichloroethane	< 1.0	N/A	1.0	µg/L	2022-09-03	
1,2-Dichloroethane	< 1.0	MAC = 5	1.0	µg/L	2022-09-03	
1,1-Dichloroethylene	< 1.0	MAC = 14	1.0	µg/L	2022-09-03	
cis-1,2-Dichloroethylene	< 1.0	N/A	1.0	µg/L	2022-09-03	
trans-1,2-Dichloroethylene	< 1.0	N/A	1.0	µg/L	2022-09-03	
Dichloromethane	< 3.0	MAC = 50	3.0	µg/L	2022-09-03	
1,2-Dichloropropane	< 1.0	N/A	1.0	µg/L	2022-09-03	
1,3-Dichloropropene (cis + trans)	< 1.0	N/A	1.0	µg/L	2022-09-03	
Ethylbenzene	< 1.0	AO ≤ 1.6	1.0	µg/L	2022-09-03	
Methyl tert-butyl ether	< 1.0	AO ≤ 15	1.0	µg/L	2022-09-03	
Styrene	< 1.0	N/A	1.0	µg/L	2022-09-03	
1,1,2,2-Tetrachloroethane	< 0.5	N/A	0.5	µg/L	2022-09-03	
Tetrachloroethylene	< 1.0	MAC = 10	1.0	µg/L	2022-09-03	
Toluene	< 1.0	MAC = 60	1.0	µg/L	2022-09-03	
1,1,1-Trichloroethane	< 1.0	N/A	1.0	µg/L	2022-09-03	

TEST RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22H4536
PROJECT	Full Spectrum Report	**REPORTED**	2022-09-13 17:56

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
East Side WTP (22H4536-01) | Matrix: Water | Sampled: 2022-08-30 10:30, Continued						
Volatile Organic Compounds (VOC), Continued						S03
1,1,2-Trichloroethane	< 1.0	N/A	1.0	µg/L	2022-09-03	
Trichloroethylene	< 1.0	MAC = 5	1.0	µg/L	2022-09-03	
Trichlorofluoromethane	< 1.0	N/A	1.0	µg/L	2022-09-03	
Vinyl chloride	< 1.0	MAC = 2	1.0	µg/L	2022-09-03	
Xylenes (total)	< 2.0	AO ≤ 20	2.0	µg/L	2022-09-03	
Surrogate: Toluene-d8	*3*		*70-130*	%	*2022-09-03*	
Surrogate: 4-Bromofluorobenzene	*102*		*70-130*	%	*2022-09-03*	
Surrogate: 1,4-Dichlorobenzene-d4	*87*		*70-130*	%	*2022-09-03*	
East Side High Lift RAW (22H4536-02) | Matrix: Water | Sampled: 2022-08-30 10:10						
Anions						
Chloride	**1.29**	AO ≤ 250	0.10	mg/L	2022-09-02	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	2022-09-02	
Nitrate (as N)	< 0.010	MAC = 10	0.010	mg/L	2022-09-02	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-09-02	
Sulfate	**25.3**	AO ≤ 500	1.0	mg/L	2022-09-02	
Calculated Parameters						
Hardness, Total (as CaCO3)	**128**	None Required	0.500	mg/L	N/A	
General Parameters						
Alkalinity, Total (as CaCO3)	**131**	N/A	1.0	mg/L	2022-09-05	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-09-05	
Alkalinity, Bicarbonate (as CaCO3)	**131**	N/A	1.0	mg/L	2022-09-05	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-09-05	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-09-05	
Carbon, Total Organic	**1.47**	N/A	0.50	mg/L	2022-09-02	
Solids, Total Dissolved	**141**	AO ≤ 500	15	mg/L	2022-09-06	HT1
Solids, Total Suspended	< 2.0	N/A	2.0	mg/L	2022-09-06	
Total Metals						
Aluminum, total	**0.0065**	OG < 0.1	0.0050	mg/L	2022-09-04	
Antimony, total	< 0.00020	MAC = 0.006	0.00020	mg/L	2022-09-04	
Arsenic, total	**0.00115**	MAC = 0.01	0.00050	mg/L	2022-09-04	
Barium, total	**0.0648**	MAC = 2	0.0050	mg/L	2022-09-04	
Beryllium, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Bismuth, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Boron, total	< 0.0500	MAC = 5	0.0500	mg/L	2022-09-04	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010	mg/L	2022-09-04	
Calcium, total	**28.5**	None Required	0.20	mg/L	2022-09-04	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2022-09-04	
Cobalt, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Copper, total	**0.00667**	MAC = 2	0.00040	mg/L	2022-09-04	

TEST RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22H4536
PROJECT	Full Spectrum Report	**REPORTED**	2022-09-13 17:56

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
East Side High Lift RAW (22H4536-02) | Matrix: Water | Sampled: 2022-08-30 10:10, Continued						
Total Metals, Continued						
Iron, total	**0.013**	AO ≤ 0.3	0.010	mg/L	2022-09-04	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2022-09-04	
Lithium, total	**0.00164**	N/A	0.00010	mg/L	2022-09-04	
Magnesium, total	**13.7**	None Required	0.010	mg/L	2022-09-04	
Manganese, total	**0.0196**	MAC = 0.12	0.00020	mg/L	2022-09-04	
Molybdenum, total	**0.00063**	N/A	0.00010	mg/L	2022-09-04	
Nickel, total	< 0.00040	N/A	0.00040	mg/L	2022-09-04	
Phosphorus, total	< 0.050	N/A	0.050	mg/L	2022-09-04	
Potassium, total	**0.51**	N/A	0.10	mg/L	2022-09-04	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2022-09-04	
Silicon, total	**3.1**	N/A	1.0	mg/L	2022-09-04	
Silver, total	< 0.000050	None Required	0.000050	mg/L	2022-09-04	
Sodium, total	**1.98**	AO ≤ 200	0.10	mg/L	2022-09-04	
Strontium, total	**0.133**	MAC = 7	0.0010	mg/L	2022-09-04	
Sulfur, total	**8.6**	N/A	3.0	mg/L	2022-09-04	
Tellurium, total	< 0.00050	N/A	0.00050	mg/L	2022-09-04	
Thallium, total	< 0.000020	N/A	0.000020	mg/L	2022-09-04	
Thorium, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Tin, total	< 0.00020	N/A	0.00020	mg/L	2022-09-04	
Titanium, total	< 0.0050	N/A	0.0050	mg/L	2022-09-04	
Tungsten, total	< 0.0002	N/A	0.0002	mg/L	2022-09-04	
Uranium, total	**0.000679**	MAC = 0.02	0.000020	mg/L	2022-09-04	
Vanadium, total	< 0.0050	N/A	0.0050	mg/L	2022-09-04	
Zinc, total	**0.0063**	AO ≤ 5	0.0040	mg/L	2022-09-04	
Zirconium, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Holland Creek Rec Centre (22H4536-03) | Matrix: Water | Sampled: 2022-08-30 10:15						
Anions						
Chloride	**2.15**	AO ≤ 250	0.10	mg/L	2022-09-02	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	2022-09-02	
Nitrate (as N)	**0.110**	MAC = 10	0.010	mg/L	2022-09-02	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-09-02	
Sulfate	**46.1**	AO ≤ 500	1.0	mg/L	2022-09-02	
Calculated Parameters						
Hardness, Total (as CaCO3)	**206**	None Required	0.500	mg/L	N/A	
General Parameters						
Alkalinity, Total (as CaCO3)	**199**	N/A	1.0	mg/L	2022-09-05	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-09-05	
Alkalinity, Bicarbonate (as CaCO3)	**199**	N/A	1.0	mg/L	2022-09-05	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-09-05	

TEST RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22H4536
PROJECT	Full Spectrum Report	**REPORTED**	2022-09-13 17:56

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Holland Creek Rec Centre (22H4536-03) | Matrix: Water | Sampled: 2022-08-30 10:15, Continued						
General Parameters, Continued						
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-09-05	
Carbon, Total Organic	< 0.50	N/A	0.50	mg/L	2022-09-02	
Solids, Total Dissolved	**246**	AO ≤ 500	15	mg/L	2022-09-06	HT1
Solids, Total Suspended	< 2.0	N/A	2.0	mg/L	2022-09-06	
Total Metals						
Aluminum, total	< 0.0050	OG < 0.1	0.0050	mg/L	2022-09-04	
Antimony, total	< 0.00020	MAC = 0.006	0.00020	mg/L	2022-09-04	
Arsenic, total	**0.00107**	MAC = 0.01	0.00050	mg/L	2022-09-04	
Barium, total	**0.102**	MAC = 2	0.0050	mg/L	2022-09-04	
Beryllium, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Bismuth, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Boron, total	< 0.0500	MAC = 5	0.0500	mg/L	2022-09-04	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010	mg/L	2022-09-04	
Calcium, total	**53.5**	None Required	0.20	mg/L	2022-09-04	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2022-09-04	
Cobalt, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Copper, total	**0.0113**	MAC = 2	0.00040	mg/L	2022-09-04	
Iron, total	< 0.010	AO ≤ 0.3	0.010	mg/L	2022-09-04	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2022-09-04	
Lithium, total	**0.00233**	N/A	0.00010	mg/L	2022-09-04	
Magnesium, total	**17.6**	None Required	0.010	mg/L	2022-09-04	
Manganese, total	< 0.00020	MAC = 0.12	0.00020	mg/L	2022-09-04	
Molybdenum, total	**0.00122**	N/A	0.00010	mg/L	2022-09-04	
Nickel, total	< 0.00040	N/A	0.00040	mg/L	2022-09-04	
Phosphorus, total	< 0.050	N/A	0.050	mg/L	2022-09-04	
Potassium, total	**0.52**	N/A	0.10	mg/L	2022-09-04	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2022-09-04	
Silicon, total	**2.8**	N/A	1.0	mg/L	2022-09-04	
Silver, total	< 0.000050	None Required	0.000050	mg/L	2022-09-04	
Sodium, total	**2.12**	AO ≤ 200	0.10	mg/L	2022-09-04	
Strontium, total	**0.230**	MAC = 7	0.0010	mg/L	2022-09-04	
Sulfur, total	**15.6**	N/A	3.0	mg/L	2022-09-04	
Tellurium, total	< 0.00050	N/A	0.00050	mg/L	2022-09-04	
Thallium, total	< 0.000020	N/A	0.000020	mg/L	2022-09-04	
Thorium, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Tin, total	< 0.00020	N/A	0.00020	mg/L	2022-09-04	
Titanium, total	< 0.0050	N/A	0.0050	mg/L	2022-09-04	
Tungsten, total	< 0.0002	N/A	0.0002	mg/L	2022-09-04	
Uranium, total	**0.000739**	MAC = 0.02	0.000020	mg/L	2022-09-04	
Vanadium, total	< 0.0050	N/A	0.0050	mg/L	2022-09-04	
Zinc, total	**0.0070**	AO ≤ 5	0.0040	mg/L	2022-09-04	
Zirconium, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22H4536
PROJECT	Full Spectrum Report	**REPORTED**	2022-09-13 17:56

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Spur Valley - 4351 Szabo Rd (22H4536-04) | Matrix: Water | Sampled: 2022-08-30 10:20						
Anions						
Chloride	**1.56**	AO ≤ 250	0.10	mg/L	2022-09-02	
Fluoride	**0.11**	MAC = 1.5	0.10	mg/L	2022-09-02	
Nitrate (as N)	**0.086**	MAC = 10	0.010	mg/L	2022-09-02	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-09-02	
Sulfate	**119**	AO ≤ 500	1.0	mg/L	2022-09-03	
Calculated Parameters						
Hardness, Total (as CaCO3)	**333**	None Required	0.500	mg/L	N/A	
General Parameters						
Alkalinity, Total (as CaCO3)	**245**	N/A	1.0	mg/L	2022-09-05	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-09-05	
Alkalinity, Bicarbonate (as CaCO3)	**245**	N/A	1.0	mg/L	2022-09-05	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-09-05	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-09-05	
Carbon, Total Organic	< 0.50	N/A	0.50	mg/L	2022-09-02	
Solids, Total Dissolved	**405**	AO ≤ 500	15	mg/L	2022-09-06	HT1
Solids, Total Suspended	< 2.0	N/A	2.0	mg/L	2022-09-06	
Total Metals						
Aluminum, total	< 0.0050	OG < 0.1	0.0050	mg/L	2022-09-04	
Antimony, total	< 0.00020	MAC = 0.006	0.00020	mg/L	2022-09-04	
Arsenic, total	< 0.00050	MAC = 0.01	0.00050	mg/L	2022-09-04	
Barium, total	**0.0198**	MAC = 2	0.0050	mg/L	2022-09-04	
Beryllium, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Bismuth, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Boron, total	< 0.0500	MAC = 5	0.0500	mg/L	2022-09-04	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010	mg/L	2022-09-04	
Calcium, total	**80.9**	None Required	0.20	mg/L	2022-09-04	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2022-09-04	
Cobalt, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Copper, total	< 0.00040	MAC = 2	0.00040	mg/L	2022-09-04	
Iron, total	< 0.010	AO ≤ 0.3	0.010	mg/L	2022-09-04	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2022-09-04	
Lithium, total	**0.00481**	N/A	0.00010	mg/L	2022-09-04	
Magnesium, total	**31.9**	None Required	0.010	mg/L	2022-09-04	
Manganese, total	< 0.00020	MAC = 0.12	0.00020	mg/L	2022-09-04	
Molybdenum, total	**0.00140**	N/A	0.00010	mg/L	2022-09-04	
Nickel, total	< 0.00040	N/A	0.00040	mg/L	2022-09-04	
Phosphorus, total	< 0.050	N/A	0.050	mg/L	2022-09-04	
Potassium, total	**0.90**	N/A	0.10	mg/L	2022-09-04	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2022-09-04	
Silicon, total	**3.5**	N/A	1.0	mg/L	2022-09-04	
Silver, total	< 0.000050	None Required	0.000050	mg/L	2022-09-04	

TEST RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22H4536
PROJECT	Full Spectrum Report	**REPORTED**	2022-09-13 17:56

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Spur Valley - 4351 Szabo Rd (22H4536-04) | Matrix: Water | Sampled: 2022-08-30 10:20, Continued						
Total Metals, Continued						
Sodium, total	**2.66**	AO ≤ 200	0.10	mg/L	2022-09-04	
Strontium, total	**0.743**	MAC = 7	0.0010	mg/L	2022-09-04	
Sulfur, total	**44.5**	N/A	3.0	mg/L	2022-09-04	
Tellurium, total	< 0.00050	N/A	0.00050	mg/L	2022-09-04	
Thallium, total	< 0.000020	N/A	0.000020	mg/L	2022-09-04	
Thorium, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Tin, total	< 0.00020	N/A	0.00020	mg/L	2022-09-04	
Titanium, total	< 0.0050	N/A	0.0050	mg/L	2022-09-04	
Tungsten, total	< 0.0002	N/A	0.0002	mg/L	2022-09-04	
Uranium, total	**0.00160**	MAC = 0.02	0.000020	mg/L	2022-09-04	
Vanadium, total	< 0.0050	N/A	0.0050	mg/L	2022-09-04	
Zinc, total	**0.0084**	AO ≤ 5	0.0040	mg/L	2022-09-04	
Zirconium, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Edgewater - EID Office (22H4536-05) | Matrix: Water | Sampled: 2022-08-30 09:45						
Anions						
Chloride	**3.90**	AO ≤ 250	0.10	mg/L	2022-09-02	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	2022-09-02	
Nitrate (as N)	**0.023**	MAC = 10	0.010	mg/L	2022-09-02	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-09-02	
Sulfate	**31.7**	AO ≤ 500	1.0	mg/L	2022-09-02	
Calculated Parameters						
Hardness, Total (as CaCO3)	**174**	None Required	0.500	mg/L	N/A	
General Parameters						
Alkalinity, Total (as CaCO3)	**177**	N/A	1.0	mg/L	2022-09-05	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-09-05	
Alkalinity, Bicarbonate (as CaCO3)	**177**	N/A	1.0	mg/L	2022-09-05	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-09-05	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-09-05	
Carbon, Total Organic	**2.98**	N/A	0.50	mg/L	2022-09-02	
Solids, Total Dissolved	**179**	AO ≤ 500	15	mg/L	2022-09-06	HT1
Solids, Total Suspended	< 2.0	N/A	2.0	mg/L	2022-09-06	
Total Metals						
Aluminum, total	< 0.0050	OG < 0.1	0.0050	mg/L	2022-09-04	
Antimony, total	< 0.00020	MAC = 0.006	0.00020	mg/L	2022-09-04	
Arsenic, total	**0.00085**	MAC = 0.01	0.00050	mg/L	2022-09-04	
Barium, total	**0.0658**	MAC = 2	0.0050	mg/L	2022-09-04	
Beryllium, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Bismuth, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Boron, total	< 0.0500	MAC = 5	0.0500	mg/L	2022-09-04	

TEST RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22H4536
PROJECT	Full Spectrum Report	**REPORTED**	2022-09-13 17:56

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Edgewater - EID Office (22H4536-05) | Matrix: Water | Sampled: 2022-08-30 09:45, Continued						
Total Metals, Continued						
Cadmium, total	< 0.000010	MAC = 0.005	0.000010	mg/L	2022-09-04	
Calcium, total	**37.8**	None Required	0.20	mg/L	2022-09-04	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2022-09-04	
Cobalt, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Copper, total	**0.0945**	MAC = 2	0.00040	mg/L	2022-09-04	
Iron, total	**0.011**	AO ≤ 0.3	0.010	mg/L	2022-09-04	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2022-09-04	
Lithium, total	**0.00281**	N/A	0.00010	mg/L	2022-09-04	
Magnesium, total	**19.2**	None Required	0.010	mg/L	2022-09-04	
Manganese, total	**0.00296**	MAC = 0.12	0.00020	mg/L	2022-09-04	
Molybdenum, total	**0.00072**	N/A	0.00010	mg/L	2022-09-04	
Nickel, total	< 0.00040	N/A	0.00040	mg/L	2022-09-04	
Phosphorus, total	< 0.050	N/A	0.050	mg/L	2022-09-04	
Potassium, total	**0.81**	N/A	0.10	mg/L	2022-09-04	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2022-09-04	
Silicon, total	**3.3**	N/A	1.0	mg/L	2022-09-04	
Silver, total	< 0.000050	None Required	0.000050	mg/L	2022-09-04	
Sodium, total	**4.16**	AO ≤ 200	0.10	mg/L	2022-09-04	
Strontium, total	**0.177**	MAC = 7	0.0010	mg/L	2022-09-04	
Sulfur, total	**10.8**	N/A	3.0	mg/L	2022-09-04	
Tellurium, total	< 0.00050	N/A	0.00050	mg/L	2022-09-04	
Thallium, total	< 0.000020	N/A	0.000020	mg/L	2022-09-04	
Thorium, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Tin, total	< 0.00020	N/A	0.00020	mg/L	2022-09-04	
Titanium, total	< 0.0050	N/A	0.0050	mg/L	2022-09-04	
Tungsten, total	< 0.0002	N/A	0.0002	mg/L	2022-09-04	
Uranium, total	**0.000498**	MAC = 0.02	0.000020	mg/L	2022-09-04	
Vanadium, total	< 0.0050	N/A	0.0050	mg/L	2022-09-04	
Zinc, total	**0.0045**	AO ≤ 5	0.0040	mg/L	2022-09-04	
Zirconium, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Edgewater Towers RAW (22H4536-06) | Matrix: Water | Sampled: 2022-08-30 10:05						
Anions						
Chloride	**0.13**	AO ≤ 250	0.10	mg/L	2022-09-02	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	2022-09-02	
Nitrate (as N)	**0.018**	MAC = 10	0.010	mg/L	2022-09-02	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-09-02	
Sulfate	**31.7**	AO ≤ 500	1.0	mg/L	2022-09-02	
Calculated Parameters						
Hardness, Total (as CaCO3)	**173**	None Required	0.500	mg/L	N/A	

TEST RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22H4536
PROJECT	Full Spectrum Report	**REPORTED**	2022-09-13 17:56

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Edgewater Towers RAW (22H4536-06) | Matrix: Water | Sampled: 2022-08-30 10:05, Continued						
General Parameters						
Alkalinity, Total (as CaCO3)	**187**	N/A	1.0	mg/L	2022-09-05	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-09-05	
Alkalinity, Bicarbonate (as CaCO3)	**187**	N/A	1.0	mg/L	2022-09-05	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-09-05	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-09-05	
Carbon, Total Organic	**2.67**	N/A	0.50	mg/L	2022-09-02	
Solids, Total Dissolved	**192**	AO ≤ 500	15	mg/L	2022-09-06	HT1
Solids, Total Suspended	< 2.0	N/A	2.0	mg/L	2022-09-06	
Total Metals						
Aluminum, total	< 0.0050	OG < 0.1	0.0050	mg/L	2022-09-04	
Antimony, total	< 0.00020	MAC = 0.006	0.00020	mg/L	2022-09-04	
Arsenic, total	**0.00089**	MAC = 0.01	0.00050	mg/L	2022-09-04	
Barium, total	**0.0651**	MAC = 2	0.0050	mg/L	2022-09-04	
Beryllium, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Bismuth, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Boron, total	< 0.0500	MAC = 5	0.0500	mg/L	2022-09-04	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010	mg/L	2022-09-04	
Calcium, total	**37.4**	None Required	0.20	mg/L	2022-09-04	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2022-09-04	
Cobalt, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Copper, total	< 0.00040	MAC = 2	0.00040	mg/L	2022-09-04	
Iron, total	< 0.010	AO ≤ 0.3	0.010	mg/L	2022-09-04	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2022-09-04	
Lithium, total	**0.00283**	N/A	0.00010	mg/L	2022-09-04	
Magnesium, total	**19.4**	None Required	0.010	mg/L	2022-09-04	
Manganese, total	**0.00146**	MAC = 0.12	0.00020	mg/L	2022-09-04	
Molybdenum, total	**0.00069**	N/A	0.00010	mg/L	2022-09-04	
Nickel, total	< 0.00040	N/A	0.00040	mg/L	2022-09-04	
Phosphorus, total	< 0.050	N/A	0.050	mg/L	2022-09-04	
Potassium, total	**0.82**	N/A	0.10	mg/L	2022-09-04	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2022-09-04	
Silicon, total	**3.4**	N/A	1.0	mg/L	2022-09-04	
Silver, total	< 0.000050	None Required	0.000050	mg/L	2022-09-04	
Sodium, total	**1.51**	AO ≤ 200	0.10	mg/L	2022-09-04	
Strontium, total	**0.177**	MAC = 7	0.0010	mg/L	2022-09-04	
Sulfur, total	**10.6**	N/A	3.0	mg/L	2022-09-04	
Tellurium, total	< 0.00050	N/A	0.00050	mg/L	2022-09-04	
Thallium, total	< 0.000020	N/A	0.000020	mg/L	2022-09-04	
Thorium, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Tin, total	< 0.00020	N/A	0.00020	mg/L	2022-09-04	
Titanium, total	< 0.0050	N/A	0.0050	mg/L	2022-09-04	
Tungsten, total	< 0.0002	N/A	0.0002	mg/L	2022-09-04	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22H4536
PROJECT	Full Spectrum Report	**REPORTED**	2022-09-13 17:56

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Edgewater Towers RAW (22H4536-06) | Matrix: Water | Sampled: 2022-08-30 10:05, Continued						
Total Metals, Continued						
Uranium, total	**0.000480**	MAC = 0.02	0.000020	mg/L	2022-09-04	
Vanadium, total	< 0.0050	N/A	0.0050	mg/L	2022-09-04	
Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2022-09-04	
Zirconium, total	< 0.00010	N/A	0.00010	mg/L	2022-09-04	
Volatile Organic Compounds (VOC)						
Benzene	< 0.5	MAC = 5	0.5	µg/L	2022-09-03	
Bromodichloromethane	< 1.0	N/A	1.0	µg/L	2022-09-03	
Bromoform	< 1.0	N/A	1.0	µg/L	2022-09-03	
Carbon tetrachloride	< 0.5	MAC = 2	0.5	µg/L	2022-09-03	
Chlorobenzene	< 1.0	AO ≤ 30	1.0	µg/L	2022-09-03	
Chloroethane	< 2.0	N/A	2.0	µg/L	2022-09-03	
Chloroform	< 1.0	N/A	1.0	µg/L	2022-09-03	
Dibromochloromethane	< 1.0	N/A	1.0	µg/L	2022-09-03	
1,2-Dibromoethane	< 0.3	N/A	0.3	µg/L	2022-09-03	
Dibromomethane	< 1.0	N/A	1.0	µg/L	2022-09-03	
1,2-Dichlorobenzene	< 0.5	AO ≤ 3	0.5	µg/L	2022-09-03	
1,3-Dichlorobenzene	< 1.0	N/A	1.0	µg/L	2022-09-03	
1,4-Dichlorobenzene	< 1.0	AO ≤ 1	1.0	µg/L	2022-09-03	
1,1-Dichloroethane	< 1.0	N/A	1.0	µg/L	2022-09-03	
1,2-Dichloroethane	< 1.0	MAC = 5	1.0	µg/L	2022-09-03	
1,1-Dichloroethylene	< 1.0	MAC = 14	1.0	µg/L	2022-09-03	
cis-1,2-Dichloroethylene	< 1.0	N/A	1.0	µg/L	2022-09-03	
trans-1,2-Dichloroethylene	< 1.0	N/A	1.0	µg/L	2022-09-03	
Dichloromethane	< 3.0	MAC = 50	3.0	µg/L	2022-09-03	
1,2-Dichloropropane	< 1.0	N/A	1.0	µg/L	2022-09-03	
1,3-Dichloropropene (cis + trans)	< 1.0	N/A	1.0	µg/L	2022-09-03	
Ethylbenzene	< 1.0	AO ≤ 1.6	1.0	µg/L	2022-09-03	
Methyl tert-butyl ether	< 1.0	AO ≤ 15	1.0	µg/L	2022-09-03	
Styrene	< 1.0	N/A	1.0	µg/L	2022-09-03	
1,1,2,2-Tetrachloroethane	< 0.5	N/A	0.5	µg/L	2022-09-03	
Tetrachloroethylene	< 1.0	MAC = 10	1.0	µg/L	2022-09-03	
Toluene	< 1.0	MAC = 60	1.0	µg/L	2022-09-03	
1,1,1-Trichloroethane	< 1.0	N/A	1.0	µg/L	2022-09-03	
1,1,2-Trichloroethane	< 1.0	N/A	1.0	µg/L	2022-09-03	
Trichloroethylene	< 1.0	MAC = 5	1.0	µg/L	2022-09-03	
Trichlorofluoromethane	< 1.0	N/A	1.0	µg/L	2022-09-03	
Vinyl chloride	< 1.0	MAC = 2	1.0	µg/L	2022-09-03	
Xylenes (total)	< 2.0	AO ≤ 20	2.0	µg/L	2022-09-03	
Surrogate: Toluene-d8	*110*		*70-130*	%	*2022-09-03*	
Surrogate: 4-Bromofluorobenzene	*95*		*70-130*	%	*2022-09-03*	
Surrogate: 1,4-Dichlorobenzene-d4	*81*		*70-130*	%	*2022-09-03*	

TEST RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22H4536
PROJECT	Full Spectrum Report	**REPORTED**	2022-09-13 17:56

Sample Qualifiers:

HT1	The sample was prepared and/or analyzed past the recommended holding time.
S03	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22H4536
PROJECT	Full Spectrum Report	**REPORTED**	2022-09-13 17:56

Analysis Description	Method Ref.	Technique	Accredited	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Carbon, Total Organic in Water	SM 5310 B (2017)	Combustion, Infrared CO2 Detection	✓	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	✓	N/A
Solids, Total Dissolved in Water	Solids in Water, Filtered / SM 2540 C* (2017)	Solids in Water, Filtered / Gravimetry (Dried at 103-105C)	✓	Kelowna
Solids, Total Suspended in Water	Solids in Water, Filtered / SM 2540 D* (2017)	Solids in Water, Filtered / Gravimetry (Dried at 103-105C)	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Volatile Organic Compounds in Water	EPA 5030B / EPA 8260D	Purge&Trap / GC-MSD (SIM)	✓	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
AO	Aesthetic Objective
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
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

Guidelines Referenced in this Report:

Guidelines for Canadian Drinking Water Quality (Health Canada, June 2019)

Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22H4536
PROJECT	Full Spectrum Report	**REPORTED**	2022-09-13 17:56

General Comments:

The results in this report apply to the 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. Samples will be disposed of 30 days after the test report has been issued or once samples expire, whichever comes first. Longer hold is possible if agreed to in writing.

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.

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22H4536
PROJECT	Full Spectrum Report	**REPORTED**	2022-09-13 17:56

The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk)**: A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup)**: An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process. Duplicates provide a measure of the analytical method's precision (reproducibility).
- **Blank Spike (BS)**: A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS). Blank spikes provide a measure of the analytical method's accuracy.
- **Matrix Spike (MS)**: A second aliquot of sample is fortified with a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM)**: A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2H4018										
Blank (B2H4018-BLK1)				Prepared: 2022-09-01, Analyzed: 2022-09-01						
Chloride	< 0.10	0.10	mg/L							
Fluoride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Sulfate	< 1.0	1.0	mg/L							
Blank (B2H4018-BLK2)				Prepared: 2022-09-02, Analyzed: 2022-09-02						
Chloride	< 0.10	0.10	mg/L							
Fluoride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Sulfate	< 1.0	1.0	mg/L							
LCS (B2H4018-BS1)				Prepared: 2022-09-01, Analyzed: 2022-09-01						
Chloride	16.2	0.10	mg/L	16.0		101	90-110			
Fluoride	4.14	0.10	mg/L	4.00		104	88-108			
Nitrate (as N)	4.17	0.010	mg/L	4.00		104	90-110			
Nitrite (as N)	1.97	0.010	mg/L	2.00		98	85-115			
Sulfate	16.1	1.0	mg/L	16.0		101	90-110			
LCS (B2H4018-BS2)				Prepared: 2022-09-02, Analyzed: 2022-09-02						
Chloride	16.1	0.10	mg/L	16.0		100	90-110			
Fluoride	4.15	0.10	mg/L	4.00		104	88-108			
Nitrate (as N)	4.13	0.010	mg/L	4.00		103	90-110			
Nitrite (as N)	1.96	0.010	mg/L	2.00		98	85-115			
Sulfate	15.9	1.0	mg/L	16.0		100	90-110			
General Parameters, Batch B2H4003										
Blank (B2H4003-BLK1)				Prepared: 2022-09-02, Analyzed: 2022-09-02						
Carbon, Total Organic	< 0.50	0.50	mg/L							
Blank (B2H4003-BLK2)				Prepared: 2022-09-02, Analyzed: 2022-09-02						
Carbon, Total Organic	< 0.50	0.50	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22H4536
PROJECT	Full Spectrum Report	**REPORTED**	2022-09-13 17:56

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2H4003, Continued										
Blank (B2H4003-BLK3)				Prepared: 2022-09-02, Analyzed: 2022-09-02						
Carbon, Total Organic	< 0.50	0.50	mg/L							
Blank (B2H4003-BLK4)				Prepared: 2022-09-02, Analyzed: 2022-09-02						
Carbon, Total Organic	< 0.50	0.50	mg/L							
Blank (B2H4003-BLK5)				Prepared: 2022-09-02, Analyzed: 2022-09-09						
Carbon, Total Organic	< 0.50	0.50	mg/L							
LCS (B2H4003-BS1)				Prepared: 2022-09-02, Analyzed: 2022-09-02						
Carbon, Total Organic	9.57	0.50	mg/L	10.0		96	78-116			
LCS (B2H4003-BS2)				Prepared: 2022-09-02, Analyzed: 2022-09-02						
Carbon, Total Organic	9.42	0.50	mg/L	10.0		94	78-116			
LCS (B2H4003-BS3)				Prepared: 2022-09-02, Analyzed: 2022-09-02						
Carbon, Total Organic	9.39	0.50	mg/L	10.0		94	78-116			
LCS (B2H4003-BS4)				Prepared: 2022-09-02, Analyzed: 2022-09-02						
Carbon, Total Organic	9.39	0.50	mg/L	10.0		94	78-116			
LCS (B2H4003-BS5)				Prepared: 2022-09-02, Analyzed: 2022-09-09						
Carbon, Total Organic	10.2	0.50	mg/L	10.0		102	78-116			
Duplicate (B2H4003-DUP1)		**Source: 22H4536-01**		Prepared: 2022-09-02, Analyzed: 2022-09-02						
Carbon, Total Organic	1.37	0.50	mg/L		1.38				16	
Matrix Spike (B2H4003-MS1)		**Source: 22H4536-01**		Prepared: 2022-09-02, Analyzed: 2022-09-02						
Carbon, Total Organic	11.6	0.50	mg/L	10.0	1.38	102	70-130			
General Parameters, Batch B2I0418										
Blank (B2I0418-BLK1)				Prepared: 2022-09-05, Analyzed: 2022-09-05						
Alkalinity, Total (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L							
Blank (B2I0418-BLK2)				Prepared: 2022-09-05, Analyzed: 2022-09-05						
Alkalinity, Total (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L							
LCS (B2I0418-BS1)				Prepared: 2022-09-05, Analyzed: 2022-09-05						
Alkalinity, Total (as CaCO3)	117	1.0	mg/L	100		117	80-120			
LCS (B2I0418-BS2)				Prepared: 2022-09-05, Analyzed: 2022-09-05						
Alkalinity, Total (as CaCO3)	114	1.0	mg/L	100		114	80-120			
General Parameters, Batch B2I0437										
Blank (B2I0437-BLK1)				Prepared: 2022-09-06, Analyzed: 2022-09-06						
Solids, Total Suspended	< 2.0	2.0	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22H4536
PROJECT	Full Spectrum Report	**REPORTED**	2022-09-13 17:56

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2I0437, Continued										
LCS (B2I0437-BS1)				Prepared: 2022-09-06, Analyzed: 2022-09-06						
Solids, Total Suspended	95.0	5.0	mg/L	100		95	85-115			
General Parameters, Batch B2I0456										
Blank (B2I0456-BLK1)				Prepared: 2022-09-06, Analyzed: 2022-09-06						
Solids, Total Dissolved	< 15	15	mg/L							
LCS (B2I0456-BS1)				Prepared: 2022-09-06, Analyzed: 2022-09-06						
Solids, Total Dissolved	246	15	mg/L	240		102	85-115			
Duplicate (B2I0456-DUP1)		**Source: 22H4536-04**		Prepared: 2022-09-06, Analyzed: 2022-09-06						
Solids, Total Dissolved	396	15	mg/L		405			2	15	
Total Metals, Batch B2I0363										
Blank (B2I0363-BLK1)				Prepared: 2022-09-03, Analyzed: 2022-09-04						
Aluminum, total	< 0.0050	0.0050	mg/L							
Antimony, total	< 0.00020	0.00020	mg/L							
Arsenic, total	< 0.00050	0.00050	mg/L							
Barium, total	< 0.0050	0.0050	mg/L							
Beryllium, total	< 0.00010	0.00010	mg/L							
Bismuth, total	< 0.00010	0.00010	mg/L							
Boron, total	< 0.0500	0.0500	mg/L							
Cadmium, total	< 0.000010	0.000010	mg/L							
Calcium, total	< 0.20	0.20	mg/L							
Chromium, total	< 0.00050	0.00050	mg/L							
Cobalt, total	< 0.00010	0.00010	mg/L							
Copper, total	< 0.00040	0.00040	mg/L							
Iron, total	< 0.010	0.010	mg/L							
Lead, total	< 0.00020	0.00020	mg/L							
Lithium, total	< 0.00010	0.00010	mg/L							
Magnesium, total	< 0.010	0.010	mg/L							
Manganese, total	< 0.00020	0.00020	mg/L							
Molybdenum, total	< 0.00010	0.00010	mg/L							
Nickel, total	< 0.00040	0.00040	mg/L							
Phosphorus, total	< 0.050	0.050	mg/L							
Potassium, total	< 0.10	0.10	mg/L							
Selenium, total	< 0.00050	0.00050	mg/L							
Silicon, total	< 1.0	1.0	mg/L							
Silver, total	< 0.000050	0.000050	mg/L							
Sodium, total	< 0.10	0.10	mg/L							
Strontium, total	< 0.0010	0.0010	mg/L							
Sulfur, total	< 3.0	3.0	mg/L							
Tellurium, total	< 0.00050	0.00050	mg/L							
Thallium, total	< 0.000020	0.000020	mg/L							
Thorium, total	< 0.00010	0.00010	mg/L							
Tin, total	< 0.00020	0.00020	mg/L							
Titanium, total	< 0.0050	0.0050	mg/L							
Tungsten, total	< 0.0002	0.0002	mg/L							
Uranium, total	< 0.000020	0.000020	mg/L							
Vanadium, total	< 0.0050	0.0050	mg/L							
Zinc, total	< 0.0040	0.0040	mg/L							
Zirconium, total	< 0.00010	0.00010	mg/L							
LCS (B2I0363-BS1)				Prepared: 2022-09-03, Analyzed: 2022-09-04						
Aluminum, total	3.99	0.0050	mg/L	4.00		100	80-120			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO Regional District of East Kootenay
PROJECT Full Spectrum Report
WORK ORDER 22H4536
REPORTED 2022-09-13 17:56

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B2I0363, Continued										
LCS (B2I0363-BS1), Continued				Prepared: 2022-09-03, Analyzed: 2022-09-04						
Antimony, total	0.0394	0.00020	mg/L	0.0400		99	80-120			
Arsenic, total	0.0412	0.00050	mg/L	0.0400		103	80-120			
Barium, total	0.0392	0.0050	mg/L	0.0400		98	80-120			
Beryllium, total	0.0402	0.00010	mg/L	0.0400		100	80-120			
Bismuth, total	0.0383	0.00010	mg/L	0.0400		96	80-120			
Boron, total	< 0.0500	0.0500	mg/L	0.0400		107	80-120			
Cadmium, total	0.0389	0.000010	mg/L	0.0400		97	80-120			
Calcium, total	3.94	0.20	mg/L	4.00		98	80-120			
Chromium, total	0.0404	0.00050	mg/L	0.0400		101	80-120			
Cobalt, total	0.0406	0.00010	mg/L	0.0400		102	80-120			
Copper, total	0.0403	0.00040	mg/L	0.0400		101	80-120			
Iron, total	4.05	0.010	mg/L	4.00		101	80-120			
Lead, total	0.0388	0.00020	mg/L	0.0400		97	80-120			
Lithium, total	0.0405	0.00010	mg/L	0.0400		101	80-120			
Magnesium, total	4.06	0.010	mg/L	4.00		101	80-120			
Manganese, total	0.0406	0.00020	mg/L	0.0400		102	80-120			
Molybdenum, total	0.0389	0.00010	mg/L	0.0400		97	80-120			
Nickel, total	0.0404	0.00040	mg/L	0.0400		101	80-120			
Phosphorus, total	3.97	0.050	mg/L	4.00		99	80-120			
Potassium, total	3.99	0.10	mg/L	4.00		100	80-120			
Selenium, total	0.0401	0.00050	mg/L	0.0400		100	80-120			
Silicon, total	4.3	1.0	mg/L	4.00		106	80-120			
Silver, total	0.0392	0.000050	mg/L	0.0400		98	80-120			
Sodium, total	3.98	0.10	mg/L	4.00		99	80-120			
Strontium, total	0.0407	0.0010	mg/L	0.0400		102	80-120			
Sulfur, total	40.8	3.0	mg/L	40.0		102	80-120			
Tellurium, total	0.0380	0.00050	mg/L	0.0400		95	80-120			
Thallium, total	0.0383	0.000020	mg/L	0.0400		96	80-120			
Thorium, total	0.0389	0.00010	mg/L	0.0400		97	80-120			
Tin, total	0.0398	0.00020	mg/L	0.0400		100	80-120			
Titanium, total	0.0418	0.0050	mg/L	0.0400		105	80-120			
Tungsten, total	0.0395	0.0002	mg/L	0.0400		99	80-120			
Uranium, total	0.0386	0.000020	mg/L	0.0400		96	80-120			
Vanadium, total	0.0410	0.0050	mg/L	0.0400		102	80-120			
Zinc, total	0.0392	0.0040	mg/L	0.0400		98	80-120			
Zirconium, total	0.0395	0.00010	mg/L	0.0400		99	80-120			
Volatile Organic Compounds (VOC), Batch B2I0268										
Blank (B2I0268-BLK1)				Prepared: 2022-09-08, Analyzed: 2022-09-03						
Benzene	< 0.5	0.5	µg/L							
Bromodichloromethane	< 1.0	1.0	µg/L							
Bromoform	< 1.0	1.0	µg/L							
Carbon tetrachloride	< 0.5	0.5	µg/L							
Chlorobenzene	< 1.0	1.0	µg/L							
Chloroethane	< 2.0	2.0	µg/L							
Chloroform	< 1.0	1.0	µg/L							
Dibromochloromethane	< 1.0	1.0	µg/L							
1,2-Dibromoethane	< 0.3	0.3	µg/L							
Dibromomethane	< 1.0	1.0	µg/L							
1,2-Dichlorobenzene	< 0.5	0.5	µg/L							
1,3-Dichlorobenzene	< 1.0	1.0	µg/L							
1,4-Dichlorobenzene	< 1.0	1.0	µg/L							
1,1-Dichloroethane	< 1.0	1.0	µg/L							
1,2-Dichloroethane	< 1.0	1.0	µg/L							
1,1-Dichloroethylene	< 1.0	1.0	µg/L							

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REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22H4536
PROJECT	Full Spectrum Report	**REPORTED**	2022-09-13 17:56

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Volatile Organic Compounds (VOC), Batch B2I0268, Continued										
Blank (B2I0268-BLK1), Continued				Prepared: 2022-09-08, Analyzed: 2022-09-03						
cis-1,2-Dichloroethylene	< 1.0	1.0	µg/L							
trans-1,2-Dichloroethylene	< 1.0	1.0	µg/L							
Dichloromethane	< 3.0	3.0	µg/L							
1,2-Dichloropropane	< 1.0	1.0	µg/L							
1,3-Dichloropropene (cis + trans)	< 1.0	1.0	µg/L							
Ethylbenzene	< 1.0	1.0	µg/L							
Methyl tert-butyl ether	< 1.0	1.0	µg/L							
Styrene	< 1.0	1.0	µg/L							
1,1,2,2-Tetrachloroethane	< 0.5	0.5	µg/L							
Tetrachloroethylene	< 1.0	1.0	µg/L							
Toluene	< 1.0	1.0	µg/L							
1,1,1-Trichloroethane	< 1.0	1.0	µg/L							
1,1,2-Trichloroethane	< 1.0	1.0	µg/L							
Trichloroethylene	< 1.0	1.0	µg/L							
Trichlorofluoromethane	< 1.0	1.0	µg/L							
Vinyl chloride	< 1.0	1.0	µg/L							
Xylenes (total)	< 2.0	2.0	µg/L							
Surrogate: Toluene-d8	*27.6*		*µg/L*	25.0		*110*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*24.1*		*µg/L*	24.9		*97*	*70-130*			
Surrogate: 1,4-Dichlorobenzene-d4	*20.9*		*µg/L*	24.9		*84*	*70-130*			
LCS (B2I0268-BS1)				Prepared: 2022-09-03, Analyzed: 2022-09-03						
Benzene	18.1	0.5	µg/L	20.0		91	70-130			
Bromodichloromethane	18.2	1.0	µg/L	20.1		90	70-130			
Bromoform	20.0	1.0	µg/L	20.0		100	70-130			
Carbon tetrachloride	16.8	0.5	µg/L	20.1		84	70-130			
Chlorobenzene	17.1	1.0	µg/L	20.1		85	70-130			
Chloroethane	19.8	2.0	µg/L	20.0		99	60-140			
Chloroform	18.1	1.0	µg/L	20.1		90	70-130			
Dibromochloromethane	18.6	1.0	µg/L	20.0		93	70-130			
1,2-Dibromoethane	16.5	0.3	µg/L	20.0		82	70-130			
Dibromomethane	18.7	1.0	µg/L	20.0		94	70-130			
1,2-Dichlorobenzene	16.8	0.5	µg/L	20.1		83	70-130			
1,3-Dichlorobenzene	14.5	1.0	µg/L	20.1		72	70-130			
1,4-Dichlorobenzene	14.1	1.0	µg/L	20.1		70	70-130			
1,1-Dichloroethane	19.0	1.0	µg/L	20.0		95	70-130			
1,2-Dichloroethane	18.9	1.0	µg/L	20.1		94	70-130			
1,1-Dichloroethylene	16.3	1.0	µg/L	20.0		81	70-130			
cis-1,2-Dichloroethylene	16.4	1.0	µg/L	20.0		82	70-130			
trans-1,2-Dichloroethylene	14.9	1.0	µg/L	20.1		74	70-130			
Dichloromethane	18.0	3.0	µg/L	20.1		90	70-130			
1,2-Dichloropropane	18.6	1.0	µg/L	20.1		93	70-130			
1,3-Dichloropropene (cis + trans)	25.1	1.0	µg/L	40.0		63	70-130			SPK
Ethylbenzene	16.7	1.0	µg/L	20.0		83	70-130			
Methyl tert-butyl ether	16.2	1.0	µg/L	20.0		81	70-130			
Styrene	15.3	1.0	µg/L	20.0		76	70-130			
1,1,2,2-Tetrachloroethane	20.6	0.5	µg/L	20.1		102	70-130			
Tetrachloroethylene	15.8	1.0	µg/L	20.0		79	70-130			
Toluene	17.8	1.0	µg/L	20.0		89	70-130			
1,1,1-Trichloroethane	17.2	1.0	µg/L	20.1		85	70-130			
1,1,2-Trichloroethane	18.3	1.0	µg/L	20.1		91	70-130			
Trichloroethylene	15.7	1.0	µg/L	20.1		78	70-130			
Trichlorofluoromethane	17.1	1.0	µg/L	20.0		85	60-140			
Vinyl chloride	19.4	1.0	µg/L	20.0		97	60-140			
Xylenes (total)	51.7	2.0	µg/L	60.0		86	70-130			
Surrogate: Toluene-d8	*29.9*		*µg/L*	25.0		*120*	*70-130*			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22H4536
PROJECT	Full Spectrum Report	**REPORTED**	2022-09-13 17:56

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Volatile Organic Compounds (VOC), Batch B2I0268, Continued										
LCS (B2I0268-BS1), Continued				Prepared: 2022-09-03, Analyzed: 2022-09-03						
Surrogate: 4-Bromofluorobenzene	*32.9*		*µg/L*	24.9		*132*	*70-130*			*S02*
Surrogate: 1,4-Dichlorobenzene-d4	*29.6*		*µg/L*	24.9		*119*	*70-130*			

QC Qualifiers:

S02	Surrogate recovery outside of control limits. Data accepted based on acceptable recovery of other surrogates.
SPK	The recovery of this analyte was outside of established control limits.

CERTIFICATE OF ANALYSIS

REPORTED TO	Regional District of East Kootenay 1164 Windermere Loop Rd Invermere, BC V0A 1K3		
ATTENTION	Brian Funke	**WORK ORDER**	22J3869
PO NUMBER		**RECEIVED / TEMP**	2022-10-26 14:00 / 6.6°C
PROJECT	Full Spectrum Report	**REPORTED**	2022-11-03 15:17
PROJECT INFO		**COC NUMBER**	B116152

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

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.

We've Got Chemistry

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.

Ahead of the Curve

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

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22J3869
PROJECT	Full Spectrum Report	**REPORTED**	2022-11-03 15:17

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Moyie Community Water System (22J3869-01) | Matrix: Water | Sampled: 2022-10-25 09:30						
Anions						
Chloride	**2.71**	AO ≤ 250	0.10	mg/L	2022-11-02	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	2022-11-02	
Nitrate (as N)	**0.936**	MAC = 10	0.010	mg/L	2022-11-02	HT1
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-11-02	HT1
Sulfate	**3.3**	AO ≤ 500	1.0	mg/L	2022-11-02	
Calculated Parameters						
Hardness, Total (as CaCO3)	**24.8**	None Required	0.500	mg/L	N/A	
General Parameters						
Alkalinity, Total (as CaCO3)	**27.8**	N/A	1.0	mg/L	2022-11-01	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-11-01	
Alkalinity, Bicarbonate (as CaCO3)	**27.8**	N/A	1.0	mg/L	2022-11-01	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-11-01	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-11-01	
Carbon, Total Organic	**1.55**	N/A	0.50	mg/L	2022-11-03	
Solids, Total Dissolved	**59**	AO ≤ 500	15	mg/L	2022-11-01	
Solids, Total Suspended	< 2.0	N/A	2.0	mg/L	2022-11-01	
Total Metals						
Aluminum, total	**0.0108**	OG < 0.1	0.0050	mg/L	2022-11-02	
Antimony, total	< 0.00020	MAC = 0.006	0.00020	mg/L	2022-11-02	
Arsenic, total	< 0.00050	MAC = 0.01	0.00050	mg/L	2022-11-02	
Barium, total	< 0.0050	MAC = 2	0.0050	mg/L	2022-11-02	
Beryllium, total	< 0.00010	N/A	0.00010	mg/L	2022-11-02	
Bismuth, total	< 0.00010	N/A	0.00010	mg/L	2022-11-02	
Boron, total	< 0.0500	MAC = 5	0.0500	mg/L	2022-11-02	
Cadmium, total	**0.000018**	MAC = 0.005	0.000010	mg/L	2022-11-02	
Calcium, total	**7.35**	None Required	0.20	mg/L	2022-11-02	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2022-11-02	
Cobalt, total	< 0.00010	N/A	0.00010	mg/L	2022-11-02	
Copper, total	**0.0940**	MAC = 2	0.00040	mg/L	2022-11-02	
Iron, total	**0.024**	AO ≤ 0.3	0.010	mg/L	2022-11-02	
Lead, total	**0.00036**	MAC = 0.005	0.00020	mg/L	2022-11-02	
Lithium, total	**0.00076**	N/A	0.00010	mg/L	2022-11-02	
Magnesium, total	**1.55**	None Required	0.010	mg/L	2022-11-02	
Manganese, total	**0.00090**	MAC = 0.12	0.00020	mg/L	2022-11-02	
Molybdenum, total	< 0.00010	N/A	0.00010	mg/L	2022-11-02	
Nickel, total	**0.00241**	N/A	0.00040	mg/L	2022-11-02	
Phosphorus, total	< 0.050	N/A	0.050	mg/L	2022-11-02	
Potassium, total	**0.66**	N/A	0.10	mg/L	2022-11-02	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2022-11-02	
Silicon, total	**5.8**	N/A	1.0	mg/L	2022-11-02	
Silver, total	< 0.000050	None Required	0.000050	mg/L	2022-11-02	

TEST RESULTS

REPORTED TO Regional District of East Kootenay
PROJECT Full Spectrum Report

WORK ORDER 22J3869
REPORTED 2022-11-03 15:17

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Moyie Community Water System (22J3869-01) | Matrix: Water | Sampled: 2022-10-25 09:30, Continued						
Total Metals, Continued						
Sodium, total	**3.57**	AO ≤ 200	0.10	mg/L	2022-11-02	
Strontium, total	**0.0311**	MAC = 7	0.0010	mg/L	2022-11-02	
Sulfur, total	< 3.0	N/A	3.0	mg/L	2022-11-02	
Tellurium, total	< 0.00050	N/A	0.00050	mg/L	2022-11-02	
Thallium, total	< 0.000020	N/A	0.000020	mg/L	2022-11-02	
Thorium, total	< 0.00010	N/A	0.00010	mg/L	2022-11-02	
Tin, total	**0.00029**	N/A	0.00020	mg/L	2022-11-02	
Titanium, total	< 0.0050	N/A	0.0050	mg/L	2022-11-02	
Tungsten, total	< 0.0002	N/A	0.0002	mg/L	2022-11-02	
Uranium, total	**0.000041**	MAC = 0.02	0.000020	mg/L	2022-11-02	
Vanadium, total	< 0.0050	N/A	0.0050	mg/L	2022-11-02	
Zinc, total	**0.0523**	AO ≤ 5	0.0040	mg/L	2022-11-02	
Zirconium, total	< 0.00010	N/A	0.00010	mg/L	2022-11-02	
Volatile Organic Compounds (VOC)						
Benzene	< 0.5	MAC = 5	0.5	µg/L	2022-11-02	
Bromodichloromethane	< 1.0	N/A	1.0	µg/L	2022-11-02	
Bromoform	< 1.0	N/A	1.0	µg/L	2022-11-02	
Carbon tetrachloride	< 0.5	MAC = 2	0.5	µg/L	2022-11-02	
Chlorobenzene	< 1.0	AO ≤ 30	1.0	µg/L	2022-11-02	
Chloroethane	< 2.0	N/A	2.0	µg/L	2022-11-02	
Chloroform	< 1.0	N/A	1.0	µg/L	2022-11-02	
Dibromochloromethane	< 1.0	N/A	1.0	µg/L	2022-11-02	
1,2-Dibromoethane	< 0.3	N/A	0.3	µg/L	2022-11-02	
Dibromomethane	< 1.0	N/A	1.0	µg/L	2022-11-02	
1,2-Dichlorobenzene	< 0.5	AO ≤ 3	0.5	µg/L	2022-11-02	
1,3-Dichlorobenzene	< 1.0	N/A	1.0	µg/L	2022-11-02	
1,4-Dichlorobenzene	< 1.0	AO ≤ 1	1.0	µg/L	2022-11-02	
1,1-Dichloroethane	< 1.0	N/A	1.0	µg/L	2022-11-02	
1,2-Dichloroethane	< 1.0	MAC = 5	1.0	µg/L	2022-11-02	
1,1-Dichloroethylene	< 1.0	MAC = 14	1.0	µg/L	2022-11-02	
cis-1,2-Dichloroethylene	< 1.0	N/A	1.0	µg/L	2022-11-02	
trans-1,2-Dichloroethylene	< 1.0	N/A	1.0	µg/L	2022-11-02	
Dichloromethane	< 3.0	MAC = 50	3.0	µg/L	2022-11-02	
1,2-Dichloropropane	< 1.0	N/A	1.0	µg/L	2022-11-02	
1,3-Dichloropropene (cis + trans)	< 1.0	N/A	1.0	µg/L	2022-11-02	
Ethylbenzene	< 1.0	AO ≤ 1.6	1.0	µg/L	2022-11-02	
Methyl tert-butyl ether	< 1.0	AO ≤ 15	1.0	µg/L	2022-11-02	
Styrene	< 1.0	N/A	1.0	µg/L	2022-11-02	
1,1,2,2-Tetrachloroethane	< 0.5	N/A	0.5	µg/L	2022-11-02	
Tetrachloroethylene	< 1.0	MAC = 10	1.0	µg/L	2022-11-02	
Toluene	< 1.0	MAC = 60	1.0	µg/L	2022-11-02	
1,1,1-Trichloroethane	< 1.0	N/A	1.0	µg/L	2022-11-02	

TEST RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22J3869
PROJECT	Full Spectrum Report	**REPORTED**	2022-11-03 15:17

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Moyie Community Water System (22J3869-01) | Matrix: Water | Sampled: 2022-10-25 09:30, Continued						
Volatile Organic Compounds (VOC), Continued						
1,1,2-Trichloroethane	< 1.0	N/A	1.0	µg/L	2022-11-02	
Trichloroethylene	< 1.0	MAC = 5	1.0	µg/L	2022-11-02	
Trichlorofluoromethane	< 1.0	N/A	1.0	µg/L	2022-11-02	
Vinyl chloride	< 1.0	MAC = 2	1.0	µg/L	2022-11-02	
Xylenes (total)	< 2.0	AO ≤ 20	2.0	µg/L	2022-11-02	
Surrogate: Toluene-d8	*100*		*70-130*	%	*2022-11-02*	
Surrogate: 4-Bromofluorobenzene	*75*		*70-130*	%	*2022-11-02*	
Surrogate: 1,4-Dichlorobenzene-d4	*75*		*70-130*	%	*2022-11-02*	

Sample Qualifiers:

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

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22J3869
PROJECT	Full Spectrum Report	**REPORTED**	2022-11-03 15:17

Analysis Description	Method Ref.	Technique	Accredited	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Carbon, Total Organic in Water	SM 5310 B (2017)	Combustion, Infrared CO2 Detection	✓	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	✓	N/A
Solids, Total Dissolved in Water	Solids in Water, Filtered / SM 2540 C* (2017)	Solids in Water, Filtered / Gravimetry (Dried at 103-105C)	✓	Kelowna
Solids, Total Suspended in Water	Solids in Water, Filtered / SM 2540 D* (2017)	Solids in Water, Filtered / Gravimetry (Dried at 103-105C)	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Volatile Organic Compounds in Water	EPA 5030B / EPA 8260D	Purge&Trap / GC-MSD (SIM)	✓	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
AO	Aesthetic Objective
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
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

Guidelines Referenced in this Report:

Guidelines for Canadian Drinking Water Quality (Health Canada, June 2019)

Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22J3869
PROJECT	Full Spectrum Report	**REPORTED**	2022-11-03 15:17

General Comments:

The results in this report apply to the 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. Samples will be disposed of 30 days after the test report has been issued or once samples expire, whichever comes first. Longer hold is possible if agreed to in writing.

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.

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22J3869
PROJECT	Full Spectrum Report	**REPORTED**	2022-11-03 15:17

The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk)**: A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup)**: An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process. Duplicates provide a measure of the analytical method's precision (reproducibility).
- **Blank Spike (BS)**: A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS). Blank spikes provide a measure of the analytical method's accuracy.
- **Matrix Spike (MS)**: A second aliquot of sample is fortified with a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM)**: A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2J3533										
Blank (B2J3533-BLK1)				Prepared: 2022-11-02, Analyzed: 2022-11-02						
Chloride	< 0.10	0.10	mg/L							
Fluoride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Sulfate	< 1.0	1.0	mg/L							
Blank (B2J3533-BLK2)				Prepared: 2022-11-02, Analyzed: 2022-11-02						
Chloride	< 0.10	0.10	mg/L							
Fluoride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Sulfate	< 1.0	1.0	mg/L							
LCS (B2J3533-BS1)				Prepared: 2022-11-02, Analyzed: 2022-11-02						
Chloride	15.6	0.10	mg/L	16.0		98	90-110			
Fluoride	4.17	0.10	mg/L	4.00		104	88-108			
Nitrate (as N)	4.10	0.010	mg/L	4.00		102	90-110			
Nitrite (as N)	1.93	0.010	mg/L	2.00		97	85-115			
Sulfate	15.8	1.0	mg/L	16.0		99	90-110			
LCS (B2J3533-BS2)				Prepared: 2022-11-02, Analyzed: 2022-11-02						
Chloride	15.6	0.10	mg/L	16.0		98	90-110			
Fluoride	4.20	0.10	mg/L	4.00		105	88-108			
Nitrate (as N)	4.13	0.010	mg/L	4.00		103	90-110			
Nitrite (as N)	1.94	0.010	mg/L	2.00		97	85-115			
Sulfate	15.7	1.0	mg/L	16.0		98	90-110			
General Parameters, Batch B2J3531										
Blank (B2J3531-BLK1)				Prepared: 2022-11-03, Analyzed: 2022-11-03						
Carbon, Total Organic	< 0.50	0.50	mg/L							
Blank (B2J3531-BLK2)				Prepared: 2022-11-03, Analyzed: 2022-11-03						
Carbon, Total Organic	< 0.50	0.50	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22J3869
PROJECT	Full Spectrum Report	**REPORTED**	2022-11-03 15:17

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2J3531, Continued										
Blank (B2J3531-BLK3)				Prepared: 2022-11-03, Analyzed: 2022-11-03						
Carbon, Total Organic	< 0.50	0.50	mg/L							
Blank (B2J3531-BLK4)				Prepared: 2022-11-03, Analyzed: 2022-11-03						
Carbon, Total Organic	< 0.50	0.50	mg/L							
LCS (B2J3531-BS1)				Prepared: 2022-11-03, Analyzed: 2022-11-03						
Carbon, Total Organic	9.75	0.50	mg/L	10.0		98	78-116			
LCS (B2J3531-BS2)				Prepared: 2022-11-03, Analyzed: 2022-11-03						
Carbon, Total Organic	10.5	0.50	mg/L	10.0		105	78-116			
LCS (B2J3531-BS3)				Prepared: 2022-11-03, Analyzed: 2022-11-03						
Carbon, Total Organic	9.46	0.50	mg/L	10.0		95	78-116			
LCS (B2J3531-BS4)				Prepared: 2022-11-03, Analyzed: 2022-11-03						
Carbon, Total Organic	< 0.50	0.50	mg/L	10.0			78-116			
General Parameters, Batch B2J3571										
Blank (B2J3571-BLK1)				Prepared: 2022-11-01, Analyzed: 2022-11-01						
Solids, Total Dissolved	< 15	15	mg/L							
Blank (B2J3571-BLK2)				Prepared: 2022-11-01, Analyzed: 2022-11-01						
Solids, Total Dissolved	< 15	15	mg/L							
LCS (B2J3571-BS1)				Prepared: 2022-11-01, Analyzed: 2022-11-01						
Solids, Total Dissolved	241	15	mg/L	240		100	85-115			
LCS (B2J3571-BS2)				Prepared: 2022-11-01, Analyzed: 2022-11-01						
Solids, Total Dissolved	235	15	mg/L	240		98	85-115			
General Parameters, Batch B2K0032										
Blank (B2K0032-BLK1)				Prepared: 2022-11-01, Analyzed: 2022-11-01						
Alkalinity, Total (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L							
LCS (B2K0032-BS1)				Prepared: 2022-11-01, Analyzed: 2022-11-01						
Alkalinity, Total (as CaCO3)	102	1.0	mg/L	100		102	80-120			
General Parameters, Batch B2K0051										
Blank (B2K0051-BLK1)				Prepared: 2022-11-01, Analyzed: 2022-11-01						
Solids, Total Suspended	< 2.0	2.0	mg/L							
LCS (B2K0051-BS1)				Prepared: 2022-11-01, Analyzed: 2022-11-01						
Solids, Total Suspended	111	10.0	mg/L	100		111	85-115			
Total Metals, Batch B2K0151										
Blank (B2K0151-BLK1)				Prepared: 2022-11-01, Analyzed: 2022-11-02						
Aluminum, total	< 0.0050	0.0050	mg/L							
Antimony, total	< 0.00020	0.00020	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22J3869
PROJECT	Full Spectrum Report	**REPORTED**	2022-11-03 15:17

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B2K0151, Continued										
Blank (B2K0151-BLK1), Continued				Prepared: 2022-11-01, Analyzed: 2022-11-02						
Arsenic, total	< 0.00050	0.00050	mg/L							
Barium, total	< 0.0050	0.0050	mg/L							
Beryllium, total	< 0.00010	0.00010	mg/L							
Bismuth, total	< 0.00010	0.00010	mg/L							
Boron, total	< 0.0500	0.0500	mg/L							
Cadmium, total	< 0.000010	0.000010	mg/L							
Calcium, total	< 0.20	0.20	mg/L							
Chromium, total	< 0.00050	0.00050	mg/L							
Cobalt, total	< 0.00010	0.00010	mg/L							
Copper, total	< 0.00040	0.00040	mg/L							
Iron, total	< 0.010	0.010	mg/L							
Lead, total	< 0.00020	0.00020	mg/L							
Lithium, total	< 0.00010	0.00010	mg/L							
Magnesium, total	< 0.010	0.010	mg/L							
Manganese, total	< 0.00020	0.00020	mg/L							
Molybdenum, total	< 0.00010	0.00010	mg/L							
Nickel, total	< 0.00040	0.00040	mg/L							
Phosphorus, total	< 0.050	0.050	mg/L							
Potassium, total	< 0.10	0.10	mg/L							
Selenium, total	< 0.00050	0.00050	mg/L							
Silicon, total	< 1.0	1.0	mg/L							
Silver, total	< 0.000050	0.000050	mg/L							
Sodium, total	< 0.10	0.10	mg/L							
Strontium, total	< 0.0010	0.0010	mg/L							
Sulfur, total	< 3.0	3.0	mg/L							
Tellurium, total	< 0.00050	0.00050	mg/L							
Thallium, total	< 0.000020	0.000020	mg/L							
Thorium, total	< 0.00010	0.00010	mg/L							
Tin, total	< 0.00020	0.00020	mg/L							
Titanium, total	< 0.0050	0.0050	mg/L							
Tungsten, total	< 0.0002	0.0002	mg/L							
Uranium, total	< 0.000020	0.000020	mg/L							
Vanadium, total	< 0.0050	0.0050	mg/L							
Zinc, total	< 0.0040	0.0040	mg/L							
Zirconium, total	< 0.00010	0.00010	mg/L							
LCS (B2K0151-BS1)				Prepared: 2022-11-01, Analyzed: 2022-11-02						
Aluminum, total	4.03	0.0050	mg/L	4.00		101	80-120			
Antimony, total	0.0398	0.00020	mg/L	0.0400		100	80-120			
Arsenic, total	0.0411	0.00050	mg/L	0.0400		103	80-120			
Barium, total	0.0395	0.0050	mg/L	0.0400		99	80-120			
Beryllium, total	0.0399	0.00010	mg/L	0.0400		100	80-120			
Bismuth, total	0.0400	0.00010	mg/L	0.0400		100	80-120			
Boron, total	< 0.0500	0.0500	mg/L	0.0400		102	80-120			
Cadmium, total	0.0400	0.000010	mg/L	0.0400		100	80-120			
Calcium, total	3.96	0.20	mg/L	4.00		99	80-120			
Chromium, total	0.0408	0.00050	mg/L	0.0400		102	80-120			
Cobalt, total	0.0404	0.00010	mg/L	0.0400		101	80-120			
Copper, total	0.0406	0.00040	mg/L	0.0400		102	80-120			
Iron, total	3.97	0.010	mg/L	4.00		99	80-120			
Lead, total	0.0411	0.00020	mg/L	0.0400		103	80-120			
Lithium, total	0.0395	0.00010	mg/L	0.0400		99	80-120			
Magnesium, total	3.97	0.010	mg/L	4.00		99	80-120			
Manganese, total	0.0402	0.00020	mg/L	0.0400		101	80-120			
Molybdenum, total	0.0400	0.00010	mg/L	0.0400		100	80-120			
Nickel, total	0.0398	0.00040	mg/L	0.0400		99	80-120			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22J3869
PROJECT	Full Spectrum Report	**REPORTED**	2022-11-03 15:17

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B2K0151, Continued										
LCS (B2K0151-BS1), Continued				Prepared: 2022-11-01, Analyzed: 2022-11-02						
Phosphorus, total	4.01	0.050	mg/L	4.00		100	80-120			
Potassium, total	4.10	0.10	mg/L	4.00		102	80-120			
Selenium, total	0.0402	0.00050	mg/L	0.0400		101	80-120			
Silicon, total	4.2	1.0	mg/L	4.00		104	80-120			
Silver, total	0.0401	0.000050	mg/L	0.0400		100	80-120			
Sodium, total	3.95	0.10	mg/L	4.00		99	80-120			
Strontium, total	0.0408	0.0010	mg/L	0.0400		102	80-120			
Sulfur, total	40.9	3.0	mg/L	40.0		102	80-120			
Tellurium, total	0.0386	0.00050	mg/L	0.0400		97	80-120			
Thallium, total	0.0415	0.000020	mg/L	0.0400		104	80-120			
Thorium, total	0.0412	0.00010	mg/L	0.0400		103	80-120			
Tin, total	0.0399	0.00020	mg/L	0.0400		100	80-120			
Titanium, total	0.0399	0.0050	mg/L	0.0400		100	80-120			
Tungsten, total	0.0417	0.0002	mg/L	0.0400		104	80-120			
Uranium, total	0.0414	0.000020	mg/L	0.0400		103	80-120			
Vanadium, total	0.0408	0.0050	mg/L	0.0400		102	80-120			
Zinc, total	0.0401	0.0040	mg/L	0.0400		100	80-120			
Zirconium, total	0.0405	0.00010	mg/L	0.0400		101	80-120			
Duplicate (B2K0151-DUP1)		**Source: 22J3869-01**		Prepared: 2022-11-01, Analyzed: 2022-11-02						
Aluminum, total	0.0115	0.0050	mg/L		0.0108				20	
Antimony, total	< 0.00020	0.00020	mg/L		< 0.00020				20	
Arsenic, total	< 0.00050	0.00050	mg/L		< 0.00050				20	
Barium, total	< 0.0050	0.0050	mg/L		< 0.0050				20	
Beryllium, total	< 0.00010	0.00010	mg/L		< 0.00010				20	
Bismuth, total	< 0.00010	0.00010	mg/L		< 0.00010				20	
Boron, total	< 0.0500	0.0500	mg/L		< 0.0500				20	
Cadmium, total	0.000020	0.000010	mg/L		0.000018				20	
Calcium, total	7.28	0.20	mg/L		7.35			< 1	20	
Chromium, total	< 0.00050	0.00050	mg/L		< 0.00050				20	
Cobalt, total	< 0.00010	0.00010	mg/L		< 0.00010				20	
Copper, total	0.0945	0.00040	mg/L		0.0940			< 1	20	
Iron, total	0.024	0.010	mg/L		0.024				20	
Lead, total	0.00036	0.00020	mg/L		0.00036				20	
Lithium, total	0.00077	0.00010	mg/L		0.00076			1	20	
Magnesium, total	1.56	0.010	mg/L		1.55			< 1	20	
Manganese, total	0.00086	0.00020	mg/L		0.00090				20	
Molybdenum, total	< 0.00010	0.00010	mg/L		< 0.00010				20	
Nickel, total	0.00239	0.00040	mg/L		0.00241			< 1	20	
Phosphorus, total	< 0.050	0.050	mg/L		< 0.050				20	
Potassium, total	0.65	0.10	mg/L		0.66			< 1	20	
Selenium, total	< 0.00050	0.00050	mg/L		< 0.00050				20	
Silicon, total	5.8	1.0	mg/L		5.8			< 1	20	
Silver, total	< 0.000050	0.000050	mg/L		< 0.000050				20	
Sodium, total	3.65	0.10	mg/L		3.57			2	20	
Strontium, total	0.0310	0.0010	mg/L		0.0311			< 1	20	
Sulfur, total	< 3.0	3.0	mg/L		< 3.0				20	
Tellurium, total	< 0.00050	0.00050	mg/L		< 0.00050				20	
Thallium, total	< 0.000020	0.000020	mg/L		< 0.000020				20	
Thorium, total	< 0.00010	0.00010	mg/L		< 0.00010				20	
Tin, total	0.00025	0.00020	mg/L		0.00029				20	
Titanium, total	< 0.0050	0.0050	mg/L		< 0.0050				20	
Tungsten, total	< 0.0002	0.0002	mg/L		< 0.0002				20	
Uranium, total	0.000040	0.000020	mg/L		0.000041				20	
Vanadium, total	< 0.0050	0.0050	mg/L		< 0.0050				20	
Zinc, total	0.0508	0.0040	mg/L		0.0523			3	20	

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	22J3869
PROJECT	Full Spectrum Report	**REPORTED**	2022-11-03 15:17

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B2K0151, Continued										
Duplicate (B2K0151-DUP1), Continued		**Source: 22J3869-01**		Prepared: 2022-11-01, Analyzed: 2022-11-02						
Zirconium, total	< 0.00010	0.00010	mg/L		< 0.00010				20	
Volatile Organic Compounds (VOC), Batch B2K0066										
Blank (B2K0066-BLK1)				Prepared: 2022-11-01, Analyzed: 2022-11-01						
Benzene	< 0.5	0.5	µg/L							
Bromodichloromethane	< 1.0	1.0	µg/L							
Bromoform	< 1.0	1.0	µg/L							
Carbon tetrachloride	< 0.5	0.5	µg/L							
Chlorobenzene	< 1.0	1.0	µg/L							
Chloroethane	< 2.0	2.0	µg/L							
Chloroform	< 1.0	1.0	µg/L							
Dibromochloromethane	< 1.0	1.0	µg/L							
1,2-Dibromoethane	< 0.3	0.3	µg/L							
Dibromomethane	< 1.0	1.0	µg/L							
1,2-Dichlorobenzene	< 0.5	0.5	µg/L							
1,3-Dichlorobenzene	< 1.0	1.0	µg/L							
1,4-Dichlorobenzene	< 1.0	1.0	µg/L							
1,1-Dichloroethane	< 1.0	1.0	µg/L							
1,2-Dichloroethane	< 1.0	1.0	µg/L							
1,1-Dichloroethylene	< 1.0	1.0	µg/L							
cis-1,2-Dichloroethylene	< 1.0	1.0	µg/L							
trans-1,2-Dichloroethylene	< 1.0	1.0	µg/L							
Dichloromethane	< 3.0	3.0	µg/L							
1,2-Dichloropropane	< 1.0	1.0	µg/L							
1,3-Dichloropropene (cis + trans)	< 1.0	1.0	µg/L							
Ethylbenzene	< 1.0	1.0	µg/L							
Methyl tert-butyl ether	< 1.0	1.0	µg/L							
Styrene	< 1.0	1.0	µg/L							
1,1,2,2-Tetrachloroethane	< 0.5	0.5	µg/L							
Tetrachloroethylene	< 1.0	1.0	µg/L							
Toluene	< 1.0	1.0	µg/L							
1,1,1-Trichloroethane	< 1.0	1.0	µg/L							
1,1,2-Trichloroethane	< 1.0	1.0	µg/L							
Trichloroethylene	< 1.0	1.0	µg/L							
Trichlorofluoromethane	< 1.0	1.0	µg/L							
Vinyl chloride	< 1.0	1.0	µg/L							
Xylenes (total)	< 2.0	2.0	µg/L							
Surrogate: Toluene-d8	*25.9*		*µg/L*	25.0		*104*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*21.6*		*µg/L*	24.9		*87*	*70-130*			
Surrogate: 1,4-Dichlorobenzene-d4	*20.8*		*µg/L*	24.9		*84*	*70-130*			

CERTIFICATE OF ANALYSIS

Work Order	: **CG2211268**	Page	: 1 of 6
Amendment	: **1**		
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Cam Jaeger	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 23-Aug-2022 08:50
PO	: VPO00813604	Date Analysis Commenced	: 23-Aug-2022
C-O-C number	: COC_20220822_Q3	Issue Date	: 31-Aug-2022 15:25
Sampler	: JENNIFER SAXTON		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Anthony Calero	Supervisor - Inorganic	Inorganics, Calgary, Alberta
Anthony Calero	Supervisor - Inorganic	Metals, Calgary, Alberta
Dwayne Bennett	Supervisor - Inorganic	Metals, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Metals, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

Qualifier	*Description*
DLB	*Detection Limit Raised. Analyte detected at comparable level in Method Blank.*
TKNI	*TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	RG_DW-08-01_WP_2022_08_22_NP	----	----	----	----
					Client sampling date / time	22-Aug-2022 10:10	----	----	----	----
						CG2211268-001	--------	--------	--------	--------
						Result	----	----	----	----
Physical Tests										
acidity (as CaCO3)	----	E283	2.0	mg/L		4.5	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L		190	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		232	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L		<1.0	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		<1.0	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L		<1.0	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		190	----	----	----	----
conductivity	----	E100	2.0	µS/cm		401	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		210	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV		246	----	----	----	----
pH	----	E108	0.10	pH units		7.79	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L		270	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L		<1.0	----	----	----	----
turbidity	----	E121	0.10	NTU		0.12	----	----	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0893	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L		5.17	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.154	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.054 TKNI	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.991	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		<0.0010	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		<0.0020	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		42.2	----	----	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		<0.50	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		<0.50	----	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID: RG_DW-08-01_WP_2022_08_22_NP	----	----	----	----
Client sampling date / time					22-Aug-2022 10:10	----	----	----	----
					CG2211268-001	--------	--------	--------	--------
					Result	----	----	----	----
Ion Balance									
anion sum	----	EC101	0.10	meq/L	4.90	----	----	----	----
cation sum	----	EC101	0.10	meq/L	4.40	----	----	----	----
ion balance (cations/anions)	----	EC101	0.010	%	89.8	----	----	----	----
ion balance (APHA)	----	EC101	0.010	%	5.38	----	----	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0180 DLB	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00012	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.137	----	----	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	----	----	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0057	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	55.7	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00025	----	----	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	0.00337	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	0.000054	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0044	----	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	17.9	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000801	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	----	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	0.667	----	----	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	4.42	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	2.96	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L	3.80	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.172	----	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

					Client sample ID	RG_DW-08-01_WP_2022_08_22_NP	----	----	----	----
					Client sampling date / time	22-Aug-2022 10:10	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		CG2211268-001	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
sulfur, total	7704-34-9	E420	0.50	mg/L		13.6	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00600 DLB	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000737	----	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	----	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0239	----	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		<0.0010	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		<0.00010	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.146	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L		<0.020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L		<0.0050	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		55.2	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		0.00019	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L		<0.10	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00349	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		<0.010	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000054	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0047	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		17.6	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		<0.00010	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000827	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L		0.690	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L		5.79	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		3.09	----	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	RG_DW-08-01_WP_2022_08_22_NP	----	----	----	----
					Client sampling date / time	22-Aug-2022 10:10	----	----	----	----
						CG2211268-001	--------	--------	--------	--------
						Result	----	----	----	----
Dissolved Metals										
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	----	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		3.93	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.180	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		15.0	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000777	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0263	----	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	----	----	----	----

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **CG2211268**	Page	: 1 of 12
Amendment	: 1		
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Cam Jaeger	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 23-Aug-2022 08:50
PO	: VPO00813604	Issue Date	: 31-Aug-2022 15:26
C-O-C number	: COC_20220822_Q3		
Sampler	: JENNIFER SAXTON		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Method Blank (MB) Values								
Total Metals	QC-MRG2-619111001	----	aluminum, total	7429-90-5	E420	0.0035 MB-LOR mg/L	0.003 mg/L	Blank result exceeds permitted value
Total Metals	QC-MRG2-619111001	----	tin, total	7440-31-5	E420	0.00127 MB-LOR mg/L	0.0001 mg/L	Blank result exceeds permitted value

Result Qualifiers

Qualifier	*Description*
MB-LOR	*Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.*

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
RG_DW-08-01_WP_2022_08_22_NP	E298	22-Aug-2022	23-Aug-2022	----	----		23-Aug-2022	28 days	1 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
RG_DW-08-01_WP_2022_08_22_NP	E235.Br-L	22-Aug-2022	23-Aug-2022	----	----		23-Aug-2022	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
RG_DW-08-01_WP_2022_08_22_NP	E235.Cl-L	22-Aug-2022	23-Aug-2022	----	----		23-Aug-2022	28 days	1 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE										
RG_DW-08-01_WP_2022_08_22_NP	E378-U	22-Aug-2022	23-Aug-2022	----	----		23-Aug-2022	3 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
RG_DW-08-01_WP_2022_08_22_NP	E235.F	22-Aug-2022	23-Aug-2022	----	----		23-Aug-2022	28 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
RG_DW-08-01_WP_2022_08_22_NP	E235.NO3-L	22-Aug-2022	23-Aug-2022	3 days	1 days	✓	23-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
RG_DW-08-01_WP_2022_08_22_NP	E235.NO2-L	22-Aug-2022	23-Aug-2022	----	----		23-Aug-2022	3 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
RG_DW-08-01_WP_2022_08_22_NP	E235.SO4	22-Aug-2022	23-Aug-2022	----	----		23-Aug-2022	28 days	1 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
RG_DW-08-01_WP_2022_08_22_NP	E318	22-Aug-2022	25-Aug-2022	----	----		25-Aug-2022	28 days	3 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
RG_DW-08-01_WP_2022_08_22_NP	E372-U	22-Aug-2022	27-Aug-2022	----	----		27-Aug-2022	28 days	5 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid)										
RG_DW-08-01_WP_2022_08_22_NP	E421.Cr-L	22-Aug-2022	26-Aug-2022	----	----		26-Aug-2022	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
RG_DW-08-01_WP_2022_08_22_NP	E421	22-Aug-2022	26-Aug-2022	----	----		26-Aug-2022	180 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
RG_DW-08-01_WP_2022_08_22_NP	E358-L	22-Aug-2022	23-Aug-2022	----	----		24-Aug-2022	28 days	1 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid)										
RG_DW-08-01_WP_2022_08_22_NP	E355-L	22-Aug-2022	23-Aug-2022	----	----		24-Aug-2022	28 days	1 days	✓
Physical Tests : Acidity by Titration										
HDPE										
RG_DW-08-01_WP_2022_08_22_NP	E283	22-Aug-2022	24-Aug-2022	----	----		24-Aug-2022	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
RG_DW-08-01_WP_2022_08_22_NP	E290	22-Aug-2022	24-Aug-2022	----	----		24-Aug-2022	14 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE RG_DW-08-01_WP_2022_08_22_NP	E100	22-Aug-2022	24-Aug-2022	----	----		24-Aug-2022	28 days	2 days	✓
Physical Tests : ORP by Electrode										
HDPE RG_DW-08-01_WP_2022_08_22_NP	E125	22-Aug-2022	----	----	----		27-Aug-2022	0.25 hrs	121 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_DW-08-01_WP_2022_08_22_NP	E108	22-Aug-2022	24-Aug-2022	----	----		24-Aug-2022	0.25 hrs	1.26 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE RG_DW-08-01_WP_2022_08_22_NP	E162	22-Aug-2022	----	----	----		25-Aug-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_DW-08-01_WP_2022_08_22_NP	E160-L	22-Aug-2022	----	----	----		25-Aug-2022	7 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_DW-08-01_WP_2022_08_22_NP	E121	22-Aug-2022	----	----	----		23-Aug-2022	3 days	1 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_DW-08-01_WP_2022_08_22_NP	E420.Cr-L	22-Aug-2022	25-Aug-2022	----	----		28-Aug-2022	180 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_DW-08-01_WP_2022_08_22_NP	E420	22-Aug-2022	25-Aug-2022	----	----		28-Aug-2022	180 days	6 days	✓

Legend & Qualifier Definitions

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

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Acidity by Titration	E283	616592	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	616598	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	615384	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	615400	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	615401	1	13	7.6	5.0	✓
Conductivity in Water	E100	616597	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	620139	1	11	9.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	620140	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	615361	1	8	12.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	615313	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	615399	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	615402	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	615403	1	18	5.5	5.0	✓
ORP by Electrode	E125	619691	1	20	5.0	5.0	✓
pH by Meter	E108	616596	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	615404	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	616740	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	619112	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	616724	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	619111	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	615362	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	617275	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	615510	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	616592	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	616598	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	615384	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	615400	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	615401	1	13	7.6	5.0	✓
Conductivity in Water	E100	616597	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	620139	1	11	9.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	620140	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	615361	1	8	12.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	615313	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	615399	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	615402	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	615403	1	18	5.5	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
ORP by Electrode	E125	619691	1	20	5.0	5.0	✓
pH by Meter	E108	616596	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	615404	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	616740	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	619112	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	616724	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	619111	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	615362	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	617275	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	616734	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	615510	1	20	5.0	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	616592	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	616598	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	615384	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	615400	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	615401	1	13	7.6	5.0	✓
Conductivity in Water	E100	616597	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	620139	1	11	9.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	620140	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	615361	1	8	12.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	615313	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	615399	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	615402	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	615403	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	615404	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	616740	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	619112	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	616724	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	619111	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	615362	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	617275	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	616734	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	615510	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	615384	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	615400	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	615401	1	13	7.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	620139	1	11	9.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	620140	1	19	5.2	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS) - Continued							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	615361	1	8	12.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	615313	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	615399	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	615402	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	615403	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	615404	1	13	7.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	619112	1	15	6.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	616724	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	619111	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	615362	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	617275	1	20	5.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation redution potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Calgary - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Calgary - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Calgary - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Calgary - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Hardness (Calculated)	EC100 Calgary - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Calgary - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

QUALITY CONTROL REPORT

Work Order	: **CG2211268**	Page	: 1 of 17
Amendment	: **1**		
Client	: Teck Coal Limited	Laboratory	: Calgary - Environmental
Contact	: Cam Jaeger	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 23-Aug-2022 08:50
PO	: VPO00813604	Date Analysis Commenced	: 23-Aug-2022
C-O-C number	: COC_20220822_Q3	Issue Date	: 31-Aug-2022 15:26
Sampler	: JENNIFER SAXTON		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Anthony Calero	Supervisor - Inorganic	Calgary Inorganics, Calgary, Alberta
Anthony Calero	Supervisor - Inorganic	Calgary Metals, Calgary, Alberta
Dwayne Bennett	Supervisor - Inorganic	Calgary Metals, Calgary, Alberta
Elke Tabora		Calgary Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Calgary Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta
Sara Niroomand		Calgary Inorganics, Calgary, Alberta
Shirley Li		Calgary Metals, Calgary, Alberta
Vladka Stamenova	Analyst	Calgary Inorganics, Calgary, Alberta

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 615510)											
CG2211262-002	Anonymous	turbidity	----	E121	0.10	NTU	52.3	51.9	0.845%	15%	----
Physical Tests (QC Lot: 616592)											
CG2211263-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	4.0	2.0	2.0	Diff <2x LOR	----
Physical Tests (QC Lot: 616596)											
CG2211263-001	Anonymous	pH	----	E108	0.10	pH units	7.76	7.77	0.129%	4%	----
Physical Tests (QC Lot: 616597)											
CG2211263-001	Anonymous	conductivity	----	E100	2.0	µS/cm	412	411	0.243%	10%	----
Physical Tests (QC Lot: 616598)											
CG2211263-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	230	241	4.75%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	230	241	4.75%	20%	----
Physical Tests (QC Lot: 616740)											
CG2211263-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	254	254	0.00%	20%	----
Physical Tests (QC Lot: 619691)											
CG2211258-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	222	223	0.809%	15%	----
Anions and Nutrients (QC Lot: 615313)											
CG2211258-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0482	0.0482	0.0622%	20%	----
Anions and Nutrients (QC Lot: 615384)											
CG2211263-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0158	0.0167	0.0009	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 615399)											
CG2211258-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.162	0.166	0.003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 615400)											
CG2211258-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 615401)											
CG2211258-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	69.3	69.5	0.369%	20%	----
Anions and Nutrients (QC Lot: 615402)											
CG2211258-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	<0.0250	<0.0250	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 615403)											
CG2211258-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 615404)											

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Anions and Nutrients (QC Lot: 615404) - continued											
CG2211258-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	1350	1320	2.32%	20%	----
Anions and Nutrients (QC Lot: 616724)											
CG2211255-008	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.249	0.248	0.001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 617275)											
CG2211267-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 615361)											
CG2211263-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 615362)											
CG2211263-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Total Metals (QC Lot: 619111)											
CG2211247-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.140	0.157	11.2%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00018	0.00018	0.00000001	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00043	0.00048	0.00005	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.160	0.167	4.22%	20%	----
		beryllium, total	7440-41-7	E420	0.000020	mg/L	0.028 µg/L	0.000023	0.000005	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.068	0.072	0.004	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.123 µg/L	0.000129	5.01%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	66.7	70.8	6.05%	20%	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.33 µg/L	0.00034	0.000007	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00125	0.00131	0.00006	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.278	0.307	10.2%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000463	0.000494	0.000031	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0271	0.0284	4.74%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	21.5	22.4	4.34%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0233	0.0238	2.21%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00123	0.00129	4.52%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00156	0.00163	0.00006	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	1.55	1.58	1.78%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	1.01 µg/L	0.00108	7.23%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	4.31	4.64	7.44%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	0.000011	<0.000010	0.000001	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.050	mg/L	17.3	17.8	2.79%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.359	0.378	5.30%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	10.5	11.4	8.01%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 619111) - continued											
CG2211247-001	Anonymous	thallium, total	7440-28-0	E420	0.000010	mg/L	0.000022	0.000022	0.0000003	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00600	0.00126	0.00474	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00098	0.00125	0.00027	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000867	0.000896	3.33%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00094	0.00105	0.00010	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0035	0.0040	0.0005	Diff <2x LOR	----
Total Metals (QC Lot: 619112)											
CG2211247-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00031	0.00038	0.00007	Diff <2x LOR	----
Dissolved Metals (QC Lot: 620139)											
CG2211240-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 620140)											
CG2211240-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00021	0.00021	0.000007	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0208	0.0208	0.162%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.017	0.017	0.0001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0515 µg/L	0.0000476	0.0000039	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	131	132	0.0852%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0494	0.0488	1.19%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	74.2	75.6	1.89%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00055	0.00054	0.000010	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000472	0.000476	0.000004	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00185	0.00184	0.00001	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.35	3.38	1.01%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	60.4 µg/L	0.0591	2.24%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.71	1.68	1.71%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.050	mg/L	1.65	1.68	1.94%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.156	0.155	1.08%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 620140) - continued											
CG2211240-001	Anonymous	sulfur, dissolved	7704-34-9	E421	0.50	mg/L	81.8	79.3	3.08%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000018	0.000018	0.0000002	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00410	0.00408	0.474%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 615510)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 616592)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Physical Tests (QCLot: 616597)						
conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 616598)						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 616734)						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 616740)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 615313)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 615384)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 615399)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 615400)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 615401)						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 615402)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 615403)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 615404)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 616724)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 617275)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 617275) - continued						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Organic / Inorganic Carbon (QCLot: 615361)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 615362)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 619111)						
aluminum, total	7429-90-5	E420	0.003	mg/L	# 0.0035	MB-LOR
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	# 0.00127	MB-LOR
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 619111) - continued						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Total Metals (QCLot: 619112)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Dissolved Metals (QCLot: 620139)						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
Dissolved Metals (QCLot: 620140)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 620140) - continued						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----

Qualifiers

Qualifier	Description
MB-LOR	*Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.*

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 615510)									
turbidity	----	E121	0.1	NTU	200 NTU	95.4	85.0	115	----
Physical Tests (QCLot: 616592)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	102	85.0	115	----
Physical Tests (QCLot: 616596)									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
Physical Tests (QCLot: 616597)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	103	90.0	110	----
Physical Tests (QCLot: 616598)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	104	85.0	115	----
Physical Tests (QCLot: 616734)									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	95.0	85.0	115	----
Physical Tests (QCLot: 616740)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	98.2	85.0	115	----
Physical Tests (QCLot: 619691)									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	98.7	95.4	104	----
Anions and Nutrients (QCLot: 615313)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	94.1	80.0	120	----
Anions and Nutrients (QCLot: 615384)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	104	85.0	115	----
Anions and Nutrients (QCLot: 615399)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 615400)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	98.3	85.0	115	----
Anions and Nutrients (QCLot: 615401)									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.6	90.0	110	----
Anions and Nutrients (QCLot: 615402)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	98.2	90.0	110	----
Anions and Nutrients (QCLot: 615403)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.0	90.0	110	----
Anions and Nutrients (QCLot: 615404)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 616724)									

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 616724) - continued									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 617275)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	103	80.0	120	----
Organic / Inorganic Carbon (QCLot: 615361)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	92.3	80.0	120	----
Organic / Inorganic Carbon (QCLot: 615362)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	99.6	80.0	120	----
Total Metals (QCLot: 619111)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	102	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	99.5	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	98.0	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	99.0	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	98.7	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	98.3	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.2	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	100	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.3	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	106	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.0	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	98.3	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	96.0	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	104	60.0	140	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	97.9	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	99.3	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	90.9	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	99.4	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	102	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 619111) - continued									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	93.0	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	95.6	80.0	120	----
Total Metals (QCLot: 619112)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Dissolved Metals (QCLot: 620139)									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.0	80.0	120	----
Dissolved Metals (QCLot: 620140)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	99.8	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	96.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	92.6	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	97.6	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	94.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.0	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	95.3	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	95.6	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	94.6	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	111	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	98.2	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.0	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	96.4	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.6	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.6	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	99.5	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	92.5	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	99.4	60.0	140	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	94.5	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	96.9	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.2	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	102	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.4	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	100	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 620140) - continued									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.6	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	96.7	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	97.9	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	99.0	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 615313)										
CG2211258-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0458 mg/L	0.05 mg/L	91.6	70.0	130	----
Anions and Nutrients (QCLot: 615384)										
CG2211264-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.106 mg/L	0.1 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 615399)										
CG2211258-005	Anonymous	fluoride	16984-48-8	E235.F	0.924 mg/L	1 mg/L	92.4	75.0	125	----
Anions and Nutrients (QCLot: 615400)										
CG2211258-005	Anonymous	bromide	24959-67-9	E235.Br-L	0.548 mg/L	0.5 mg/L	110	75.0	125	----
Anions and Nutrients (QCLot: 615401)										
CG2211258-005	Anonymous	chloride	16887-00-6	E235.Cl-L	109 mg/L	100 mg/L	109	75.0	125	----
Anions and Nutrients (QCLot: 615402)										
CG2211258-005	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.42 mg/L	2.5 mg/L	96.6	75.0	125	----
Anions and Nutrients (QCLot: 615403)										
CG2211258-005	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.548 mg/L	0.5 mg/L	110	75.0	125	----
Anions and Nutrients (QCLot: 615404)										
CG2211258-005	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 616724)										
CG2211255-010	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.26 mg/L	2.5 mg/L	90.5	70.0	130	----
Anions and Nutrients (QCLot: 617275)										
CG2211268-001	RG_DW-08-01_WP_2022_08_22_NP	phosphorus, total	7723-14-0	E372-U	0.0465 mg/L	0.05 mg/L	93.0	70.0	130	----
Organic / Inorganic Carbon (QCLot: 615361)										
CG2211263-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	4.88 mg/L	5 mg/L	97.7	70.0	130	----
Organic / Inorganic Carbon (QCLot: 615362)										
CG2211263-001	Anonymous	carbon, total organic [TOC]	----	E355-L	5.21 mg/L	5 mg/L	104	70.0	130	----
Total Metals (QCLot: 619111)										
CG2211247-002	Anonymous	aluminum, total	7429-90-5	E420	1.80 mg/L	2 mg/L	89.8	70.0	130	----
		antimony, total	7440-36-0	E420	0.179 mg/L	0.2 mg/L	89.5	70.0	130	----
		arsenic, total	7440-38-2	E420	0.179 mg/L	0.2 mg/L	89.4	70.0	130	----
		barium, total	7440-39-3	E420	0.182 mg/L	0.2 mg/L	91.3	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 619111) - continued										
CG2211247-002	Anonymous	beryllium, total	7440-41-7	E420	0.353 mg/L	0.4 mg/L	88.2	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0884 mg/L	0.1 mg/L	88.4	70.0	130	----
		boron, total	7440-42-8	E420	0.861 mg/L	1 mg/L	86.1	70.0	130	----
		cadmium, total	7440-43-9	E420	0.0362 mg/L	0.04 mg/L	90.6	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.178 mg/L	0.2 mg/L	88.9	70.0	130	----
		copper, total	7440-50-8	E420	0.177 mg/L	0.2 mg/L	88.7	70.0	130	----
		iron, total	7439-89-6	E420	17.9 mg/L	20 mg/L	89.7	70.0	130	----
		lead, total	7439-92-1	E420	0.181 mg/L	0.2 mg/L	90.6	70.0	130	----
		lithium, total	7439-93-2	E420	0.917 mg/L	1 mg/L	91.7	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	10 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.182 mg/L	0.2 mg/L	91.1	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.185 mg/L	0.2 mg/L	92.7	70.0	130	----
		nickel, total	7440-02-0	E420	0.353 mg/L	0.4 mg/L	88.4	70.0	130	----
		potassium, total	7440-09-7	E420	36.4 mg/L	40 mg/L	90.9	70.0	130	----
		selenium, total	7782-49-2	E420	0.360 mg/L	0.4 mg/L	90.1	70.0	130	----
		silicon, total	7440-21-3	E420	92.3 mg/L	100 mg/L	92.3	70.0	130	----
		silver, total	7440-22-4	E420	0.0389 mg/L	0.04 mg/L	97.2	70.0	130	----
		sodium, total	7440-23-5	E420	16.8 mg/L	20 mg/L	84.2	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	173 mg/L	200 mg/L	86.4	70.0	130	----
		thallium, total	7440-28-0	E420	0.0355 mg/L	0.04 mg/L	88.7	70.0	130	----
		tin, total	7440-31-5	E420	0.180 mg/L	0.2 mg/L	89.8	70.0	130	----
		titanium, total	7440-32-6	E420	0.334 mg/L	0.4 mg/L	83.6	70.0	130	----
		uranium, total	7440-61-1	E420	0.0358 mg/L	0.04 mg/L	89.6	70.0	130	----
		vanadium, total	7440-62-2	E420	0.891 mg/L	1 mg/L	89.1	70.0	130	----
		zinc, total	7440-66-6	E420	3.59 mg/L	4 mg/L	89.7	70.0	130	----
Total Metals (QCLot: 619112)										
CG2211247-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.368 mg/L	0.4 mg/L	92.0	70.0	130	----
Dissolved Metals (QCLot: 620139)										
CG2211240-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.389 mg/L	0.4 mg/L	97.2	70.0	130	----
Dissolved Metals (QCLot: 620140)										
CG2211240-002	Anonymous	aluminum, dissolved	7429-90-5	E421	1.88 mg/L	2 mg/L	94.0	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.199 mg/L	0.2 mg/L	99.7	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.185 mg/L	0.2 mg/L	92.4	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.194 mg/L	0.2 mg/L	97.2	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 620140) - continued										
CG2211240-002	Anonymous	beryllium, dissolved	7440-41-7	E421	0.351 mg/L	0.4 mg/L	87.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0985 mg/L	0.1 mg/L	98.5	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.887 mg/L	1 mg/L	88.7	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0391 mg/L	0.04 mg/L	97.9	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.192 mg/L	0.2 mg/L	96.1	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.191 mg/L	0.2 mg/L	95.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	19.2 mg/L	20 mg/L	96.2	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.198 mg/L	0.2 mg/L	98.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.873 mg/L	1 mg/L	87.3	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.192 mg/L	0.2 mg/L	96.2	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.196 mg/L	0.2 mg/L	98.3	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.381 mg/L	0.4 mg/L	95.3	70.0	130	----
		potassium, dissolved	7440-09-7	E421	38.0 mg/L	40 mg/L	95.1	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.378 mg/L	0.4 mg/L	94.5	70.0	130	----
		silicon, dissolved	7440-21-3	E421	83.6 mg/L	100 mg/L	83.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0422 mg/L	0.04 mg/L	106	70.0	130	----
		sodium, dissolved	7440-23-5	E421	19.2 mg/L	20 mg/L	96.0	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.186 mg/L	0.2 mg/L	92.9	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	183 mg/L	200 mg/L	91.6	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.196 mg/L	0.2 mg/L	98.2	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.382 mg/L	0.4 mg/L	95.6	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.0393 mg/L	0.04 mg/L	98.3	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.952 mg/L	1 mg/L	95.2	70.0	130	----
		zinc, dissolved	7440-66-6	E421	3.89 mg/L	4 mg/L	97.3	70.0	130	----