CERTIFICATE OF ANALYSIS

REPORTED TO	Glenmore Ellison Improvement District 445 Glenmore Road KELOWNA, BC V1V 1Z6		
ATTENTION	Chris Mackay	**WORK ORDER**	23K1689
PO NUMBER		**RECEIVED / TEMP**	2023-11-14 14:46 / 12.8°C
PROJECT	Drinking Water	**REPORTED**	2023-11-21 15:27
PROJECT INFO	Comprehensive Samples - Okanagan Lake Source	**COC NUMBER**	eCOC#00008185

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.

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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	Glenmore Ellison Improvement District	**WORK ORDER**	23K1689
PROJECT	Drinking Water	**REPORTED**	2023-11-21 15:27

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Okanagan Lake P/S (RAW) (23K1689-01) | Matrix: Drinking Water | Sampled: 2023-11-14 10:45						
Anions						
Chloride	**6.01**	AO ≤ 250	0.10	mg/L	2023-11-16	
Fluoride	**0.12**	MAC = 1.5	0.10	mg/L	2023-11-16	
Nitrate (as N)	**0.023**	MAC = 10	0.010	mg/L	2023-11-16	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2023-11-16	
Sulfate	**31.5**	AO ≤ 500	1.0	mg/L	2023-11-16	
Calculated Parameters						
Hardness, Total (as CaCO3)	**130**	None Required	0.500	mg/L	N/A	
Langelier Index	**-0.4**	N/A	-5.0		2023-11-20	CT6
Solids, Total Dissolved	**175**	AO ≤ 500	1.00	mg/L	N/A	
General Parameters						
Alkalinity, Total (as CaCO3)	**127**	N/A	1.0	mg/L	2023-11-17	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0	mg/L	2023-11-17	
Alkalinity, Bicarbonate (as CaCO3)	**127**	N/A	1.0	mg/L	2023-11-17	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0	mg/L	2023-11-17	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0	mg/L	2023-11-17	
Colour, True	**5.1**	AO ≤ 15	5.0	CU	2023-11-15	
Conductivity (EC)	**289**	N/A	2.0	µS/cm	2023-11-17	
Cyanide, Total	< 0.0020	MAC = 0.2	0.0020	mg/L	2023-11-18	
pH	**7.43**	7.0-10.5	0.10	pH units	2023-11-17	HT2
Temperature, at pH	**23.7**	N/A		°C	2023-11-17	HT2
Turbidity	**0.22**	OG < 1	0.10	NTU	2023-11-15	
Total Metals						
Aluminum, total	< 0.0050	OG < 0.1	0.0050	mg/L	2023-11-17	
Antimony, total	< 0.00020	MAC = 0.006	0.00020	mg/L	2023-11-17	
Arsenic, total	< 0.00050	MAC = 0.01	0.00050	mg/L	2023-11-17	
Barium, total	**0.0223**	MAC = 2	0.0050	mg/L	2023-11-17	
Boron, total	< 0.0500	MAC = 5	0.0500	mg/L	2023-11-17	
Cadmium, total	< 0.000010	MAC = 0.007	0.000010	mg/L	2023-11-17	
Calcium, total	**35.8**	None Required	0.20	mg/L	2023-11-17	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2023-11-17	
Cobalt, total	< 0.00010	N/A	0.00010	mg/L	2023-11-17	
Copper, total	**0.00106**	MAC = 2	0.00040	mg/L	2023-11-17	
Iron, total	< 0.010	AO ≤ 0.3	0.010	mg/L	2023-11-17	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2023-11-17	
Magnesium, total	**9.84**	None Required	0.010	mg/L	2023-11-17	
Manganese, total	**0.00073**	MAC = 0.12	0.00020	mg/L	2023-11-17	
Mercury, total	< 0.000010	MAC = 0.001	0.000010	mg/L	2023-11-21	
Molybdenum, total	**0.00346**	N/A	0.00010	mg/L	2023-11-17	
Nickel, total	**0.00046**	N/A	0.00040	mg/L	2023-11-17	
Potassium, total	**2.45**	N/A	0.10	mg/L	2023-11-17	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2023-11-17	

TEST RESULTS

REPORTED TO	Glenmore Ellison Improvement District	**WORK ORDER**	23K1689
PROJECT	Drinking Water	**REPORTED**	2023-11-21 15:27

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Okanagan Lake P/S (RAW) (23K1689-01) | Matrix: Drinking Water | Sampled: 2023-11-14 10:45, Continued						
Total Metals, Continued						
Sodium, total	**11.9**	AO ≤ 200	0.10	mg/L	2023-11-17	
Uranium, total	**0.00250**	MAC = 0.02	0.000020	mg/L	2023-11-17	
Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2023-11-17	
UV Plant (PRE UV - RAW) Sink (23K1689-02) | Matrix: Drinking Water | Sampled: 2023-11-14 12:10						
Anions						
Chloride	**6.02**	AO ≤ 250	0.10	mg/L	2023-11-16	
Fluoride	**0.12**	MAC = 1.5	0.10	mg/L	2023-11-16	
Nitrate (as N)	**0.023**	MAC = 10	0.010	mg/L	2023-11-16	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2023-11-16	
Sulfate	**31.6**	AO ≤ 500	1.0	mg/L	2023-11-16	
Calculated Parameters						
Hardness, Total (as CaCO3)	**127**	None Required	0.500	mg/L	N/A	
Langelier Index	**-0.3**	N/A	-5.0		2023-11-20	CT6
Solids, Total Dissolved	**173**	AO ≤ 500	1.00	mg/L	N/A	
General Parameters						
Alkalinity, Total (as CaCO3)	**125**	N/A	1.0	mg/L	2023-11-17	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0	mg/L	2023-11-17	
Alkalinity, Bicarbonate (as CaCO3)	**125**	N/A	1.0	mg/L	2023-11-17	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0	mg/L	2023-11-17	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0	mg/L	2023-11-17	
Colour, True	**5.2**	AO ≤ 15	5.0	CU	2023-11-15	
Conductivity (EC)	**291**	N/A	2.0	µS/cm	2023-11-17	
Cyanide, Total	< 0.0020	MAC = 0.2	0.0020	mg/L	2023-11-18	
pH	**7.59**	7.0-10.5	0.10	pH units	2023-11-17	HT2
Temperature, at pH	**24.0**	N/A		°C	2023-11-17	HT2
Turbidity	**0.25**	OG < 1	0.10	NTU	2023-11-15	
Total Metals						
Aluminum, total	< 0.0050	OG < 0.1	0.0050	mg/L	2023-11-17	
Antimony, total	< 0.00020	MAC = 0.006	0.00020	mg/L	2023-11-17	
Arsenic, total	< 0.00050	MAC = 0.01	0.00050	mg/L	2023-11-17	
Barium, total	**0.0218**	MAC = 2	0.0050	mg/L	2023-11-17	
Boron, total	< 0.0500	MAC = 5	0.0500	mg/L	2023-11-17	
Cadmium, total	< 0.000010	MAC = 0.007	0.000010	mg/L	2023-11-17	
Calcium, total	**34.2**	None Required	0.20	mg/L	2023-11-17	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2023-11-17	
Cobalt, total	< 0.00010	N/A	0.00010	mg/L	2023-11-17	
Copper, total	**0.00110**	MAC = 2	0.00040	mg/L	2023-11-17	
Iron, total	< 0.010	AO ≤ 0.3	0.010	mg/L	2023-11-17	

TEST RESULTS

REPORTED TO	Glenmore Ellison Improvement District	**WORK ORDER**	23K1689
PROJECT	Drinking Water	**REPORTED**	2023-11-21 15:27

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
UV Plant (PRE UV - RAW) Sink (23K1689-02) | Matrix: Drinking Water | Sampled: 2023-11-14 12:10, Continued						
Total Metals, Continued						
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2023-11-17	
Magnesium, total	**10.0**	None Required	0.010	mg/L	2023-11-17	
Manganese, total	**0.00076**	MAC = 0.12	0.00020	mg/L	2023-11-17	
Mercury, total	< 0.000010	MAC = 0.001	0.000010	mg/L	2023-11-21	
Molybdenum, total	**0.00339**	N/A	0.00010	mg/L	2023-11-17	
Nickel, total	**0.00043**	N/A	0.00040	mg/L	2023-11-17	
Potassium, total	**2.49**	N/A	0.10	mg/L	2023-11-17	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2023-11-17	
Sodium, total	**12.0**	AO ≤ 200	0.10	mg/L	2023-11-17	
Uranium, total	**0.00254**	MAC = 0.02	0.000020	mg/L	2023-11-17	
Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2023-11-17	
Clearwell Outflow (23K1689-03) | Matrix: Drinking Water | Sampled: 2023-11-14 12:30						
Anions						
Chloride	**8.39**	AO ≤ 250	0.10	mg/L	2023-11-16	
Fluoride	**0.12**	MAC = 1.5	0.10	mg/L	2023-11-16	
Nitrate (as N)	**0.018**	MAC = 10	0.010	mg/L	2023-11-16	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2023-11-16	
Sulfate	**31.7**	AO ≤ 500	1.0	mg/L	2023-11-16	
Calculated Parameters						
Hardness, Total (as CaCO3)	**129**	None Required	0.500	mg/L	N/A	
Langelier Index	**-0.3**	N/A	-5.0		2023-11-20	CT6
Solids, Total Dissolved	**175**	AO ≤ 500	1.00	mg/L	N/A	
General Parameters						
Alkalinity, Total (as CaCO3)	**123**	N/A	1.0	mg/L	2023-11-17	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0	mg/L	2023-11-17	
Alkalinity, Bicarbonate (as CaCO3)	**123**	N/A	1.0	mg/L	2023-11-17	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0	mg/L	2023-11-17	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0	mg/L	2023-11-17	
Colour, True	< 5.0	AO ≤ 15	5.0	CU	2023-11-15	
Conductivity (EC)	**293**	N/A	2.0	µS/cm	2023-11-17	
Cyanide, Total	< 0.0020	MAC = 0.2	0.0020	mg/L	2023-11-18	
pH	**7.55**	7.0-10.5	0.10	pH units	2023-11-17	HT2
Temperature, at pH	**24.2**	N/A		°C	2023-11-17	HT2
Turbidity	**0.20**	OG < 1	0.10	NTU	2023-11-15	
Total Metals						
Aluminum, total	**0.0054**	OG < 0.1	0.0050	mg/L	2023-11-17	
Antimony, total	< 0.00020	MAC = 0.006	0.00020	mg/L	2023-11-17	
Arsenic, total	< 0.00050	MAC = 0.01	0.00050	mg/L	2023-11-17	

TEST RESULTS

REPORTED TO	Glenmore Ellison Improvement District	**WORK ORDER**	23K1689
PROJECT	Drinking Water	**REPORTED**	2023-11-21 15:27

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Clearwell Outflow (23K1689-03) | Matrix: Drinking Water | Sampled: 2023-11-14 12:30, Continued						
Total Metals, Continued						
Barium, total	**0.0215**	MAC = 2	0.0050	mg/L	2023-11-17	
Boron, total	< 0.0500	MAC = 5	0.0500	mg/L	2023-11-17	
Cadmium, total	< 0.000010	MAC = 0.007	0.000010	mg/L	2023-11-17	
Calcium, total	**35.4**	None Required	0.20	mg/L	2023-11-17	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2023-11-17	
Cobalt, total	< 0.00010	N/A	0.00010	mg/L	2023-11-17	
Copper, total	**0.00142**	MAC = 2	0.00040	mg/L	2023-11-17	
Iron, total	< 0.010	AO ≤ 0.3	0.010	mg/L	2023-11-17	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2023-11-17	
Magnesium, total	**9.85**	None Required	0.010	mg/L	2023-11-17	
Manganese, total	**0.00065**	MAC = 0.12	0.00020	mg/L	2023-11-17	
Mercury, total	< 0.000010	MAC = 0.001	0.000010	mg/L	2023-11-21	
Molybdenum, total	**0.00345**	N/A	0.00010	mg/L	2023-11-17	
Nickel, total	**0.00042**	N/A	0.00040	mg/L	2023-11-17	
Potassium, total	**2.46**	N/A	0.10	mg/L	2023-11-17	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2023-11-17	
Sodium, total	**11.9**	AO ≤ 200	0.10	mg/L	2023-11-17	
Uranium, total	**0.00254**	MAC = 0.02	0.000020	mg/L	2023-11-17	
Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2023-11-17	

Sample Qualifiers:

CT6 Results were based on lab temperature & lab pH.

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

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Glenmore Ellison Improvement District	**WORK ORDER**	23K1689
PROJECT	Drinking Water	**REPORTED**	2023-11-21 15:27

Analysis Description	Method Ref.	Technique	Accredited	Location
Alkalinity in Water	SM 2320 B* (2021)	Titration with H2SO4	✓	Kelowna
Anions in Water	SM 4110 B (2020)	Ion Chromatography	✓	Kelowna
Colour, True in Water	SM 2120 C (2021)	Spectrophotometry (456 nm)	✓	Kelowna
Conductivity in Water	SM 2510 B (2021)	Conductivity Meter	✓	Kelowna
Cyanide, SAD in Water	ASTM D7511-12	Flow Injection with In-Line UV Digestion and Amperometry	✓	Kelowna
Hardness in Water	SM 2340 B* (2021)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	✓	N/A
Langelier Index in Water	SM 2330 B (2021)	Calculation		N/A
Mercury, total in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	✓	Richmond
pH in Water	SM 4500-H+ B (2021)	Electrometry	✓	Kelowna
Solids, Total Dissolved in Water	SM 1030 E (2021)	SM 1030 E		N/A
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	✓	Kelowna

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

Glossary of Terms:

RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
°C	Degrees Celcius
AO	Aesthetic Objective
CU	Colour Units (referenced against a platinum cobalt standard)
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
NTU	Nephelometric Turbidity Units
OG	Operational Guideline (treated water)
pH units	pH < 7 = acidic, ph > 7 = basic
µS/cm	Microsiemens per centimetre
ASTM	ASTM International Test Methods
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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REPORTED TO	Glenmore Ellison Improvement District	**WORK ORDER**	23K1689
PROJECT	Drinking Water	**REPORTED**	2023-11-21 15:27

General Comments:

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

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