



**CERTIFICATE OF ANALYSIS**

**REPORTED TO** Glenmore Ellison Improvement District  
445 Glenmore Road  
KELOWNA, BC V1V 1Z6

**ATTENTION** Gordon Ross

**PO NUMBER**  
**PROJECT** Drinking Water  
**PROJECT INFO**

**WORK ORDER** 21K2032

**RECEIVED / TEMP** 2021-11-15 14:38 / 13.7°C  
**REPORTED** 2021-11-22 15:56  
**COC NUMBER** No Number

**Introduction:**

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*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*



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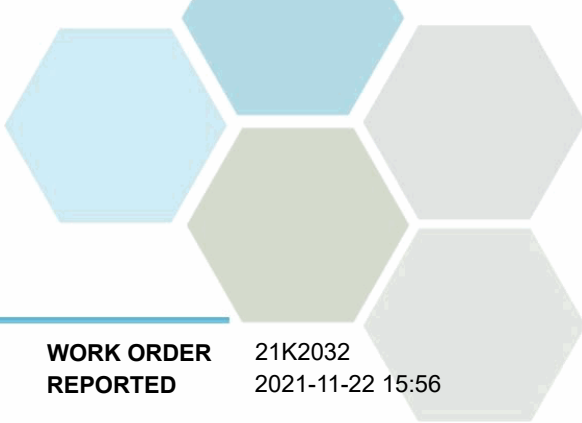
If you have any questions or concerns, please contact me at [bwhitehead@caro.ca](mailto:bwhitehead@caro.ca)

**Authorized By:**

Brent Whitehead  
Client Scientist - Team Lead

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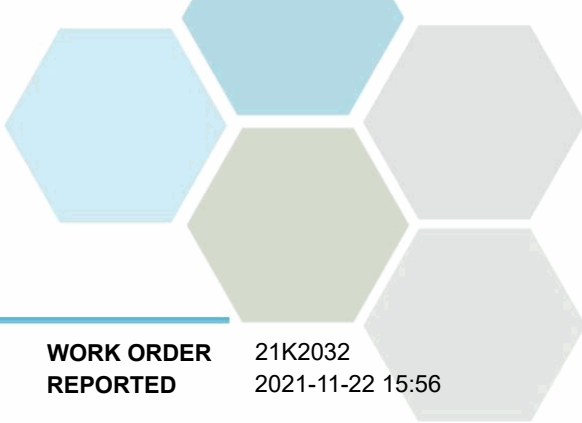


# TEST RESULTS

**REPORTED TO PROJECT** Glenmore Ellison Improvement District  
Drinking Water

**WORK ORDER REPORTED** 21K2032  
2021-11-22 15:56

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>UV Plant Raw (21K2032-01)   Matrix: Water   Sampled: 2021-11-15</b>					
<b>Anions</b>					
Chloride	5.31	AO ≤ 250	0.10 mg/L	2021-11-17	
Fluoride	0.25	MAC = 1.5	0.10 mg/L	2021-11-17	
Nitrate (as N)	0.087	MAC = 10	0.010 mg/L	2021-11-17	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2021-11-17	
Sulfate	30.1	AO ≤ 500	1.0 mg/L	2021-11-17	
<b>Calculated Parameters</b>					
Hardness, Total (as CaCO3)	128	None Required	0.500 mg/L	N/A	
Langelier Index	-0.01	N/A	-5.0	2021-11-22	
Solids, Total Dissolved	175	AO ≤ 500	1.00 mg/L	N/A	
<b>General Parameters</b>					
Alkalinity, Total (as CaCO3)	129	N/A	1.0 mg/L	2021-11-18	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0 mg/L	2021-11-18	
Alkalinity, Bicarbonate (as CaCO3)	129	N/A	1.0 mg/L	2021-11-18	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0 mg/L	2021-11-18	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0 mg/L	2021-11-18	
Colour, True	< 5.0	AO ≤ 15	5.0 CU	2021-11-17	
Conductivity (EC)	284	N/A	2.0 µS/cm	2021-11-18	
Cyanide, Total	< 0.0020	MAC = 0.2	0.0020 mg/L	2021-11-20	
pH	7.81	7.0-10.5	0.10 pH units	2021-11-18	HT2
Temperature, at pH	19.8	N/A	°C	2021-11-18	HT2
Turbidity	0.20	OG < 1	0.10 NTU	2021-11-17	
<b>Microbiological Parameters</b>					
Coliforms, Total (Q-Tray)	2	MAC = 0	1 MPN/100 mL	2021-11-16	
E. coli (Q-Tray)	< 1	MAC = 0	1 MPN/100 mL	2021-11-16	
<b>Total Metals</b>					
Aluminum, total	0.0079	OG < 0.1	0.0050 mg/L	2021-11-20	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2021-11-20	
Arsenic, total	0.00052	MAC = 0.01	0.00050 mg/L	2021-11-20	
Barium, total	0.0235	MAC = 2	0.0050 mg/L	2021-11-20	
Boron, total	< 0.0500	MAC = 5	0.0500 mg/L	2021-11-20	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010 mg/L	2021-11-20	
Calcium, total	35.6	None Required	0.20 mg/L	2021-11-20	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2021-11-20	
Cobalt, total	< 0.00010	N/A	0.00010 mg/L	2021-11-20	
Copper, total	0.00144	MAC = 2	0.00040 mg/L	2021-11-20	
Iron, total	< 0.010	AO ≤ 0.3	0.010 mg/L	2021-11-20	
Lead, total	< 0.00020	MAC = 0.005	0.00020 mg/L	2021-11-20	
Magnesium, total	9.59	None Required	0.010 mg/L	2021-11-20	
Manganese, total	0.00087	MAC = 0.12	0.00020 mg/L	2021-11-20	
Mercury, total	< 0.000010	MAC = 0.001	0.000010 mg/L	2021-11-20	



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Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
<b>UV Plant Raw (21K2032-01)   Matrix: Water   Sampled: 2021-11-15, Continued</b>						
<i>Total Metals, Continued</i>						
Molybdenum, total	0.00366	N/A	0.00010	mg/L	2021-11-20	
Nickel, total	< 0.00040	N/A	0.00040	mg/L	2021-11-20	
Potassium, total	2.30	N/A	0.10	mg/L	2021-11-20	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2021-11-20	
Sodium, total	12.8	AO ≤ 200	0.10	mg/L	2021-11-20	
Strontium, total	0.272	7	0.0010	mg/L	2021-11-20	
Uranium, total	0.00254	MAC = 0.02	0.000020	mg/L	2021-11-20	
Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2021-11-20	

**Clearwell Outflow (21K2032-02) | Matrix: Water | Sampled: 2021-11-15 09:15**

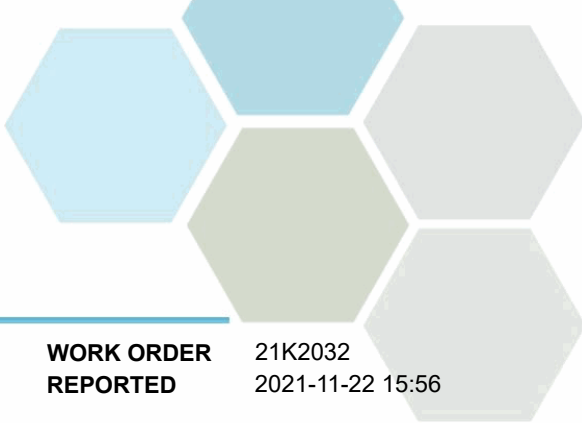
<i>Anions</i>						
Chloride	7.82	AO ≤ 250	0.10	mg/L	2021-11-17	
Fluoride	0.22	MAC = 1.5	0.10	mg/L	2021-11-17	
Nitrate (as N)	0.081	MAC = 10	0.010	mg/L	2021-11-17	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2021-11-17	
Sulfate	30.2	AO ≤ 500	1.0	mg/L	2021-11-17	

<i>Calculated Parameters</i>						
Hardness, Total (as CaCO3)	127	None Required	0.500	mg/L	N/A	
Solids, Total Dissolved	166	AO ≤ 500	1.00	mg/L	N/A	

<i>General Parameters</i>						
Alkalinity, Total (as CaCO3)	111	N/A	1.0	mg/L	2021-11-18	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0	mg/L	2021-11-18	
Alkalinity, Bicarbonate (as CaCO3)	111	N/A	1.0	mg/L	2021-11-18	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0	mg/L	2021-11-18	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0	mg/L	2021-11-18	
Conductivity (EC)	282	N/A	2.0	µS/cm	2021-11-18	
Cyanide, Total	< 0.0020	MAC = 0.2	0.0020	mg/L	2021-11-20	
pH	7.73	7.0-10.5	0.10	pH units	2021-11-18	HT2
Turbidity	0.20	OG < 1	0.10	NTU	2021-11-17	

<i>Microbiological Parameters</i>						
Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2021-11-16	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2021-11-16	

<i>Total Metals</i>						
Aluminum, total	0.0078	OG < 0.1	0.0050	mg/L	2021-11-20	
Antimony, total	< 0.00020	MAC = 0.006	0.00020	mg/L	2021-11-20	
Arsenic, total	0.00051	MAC = 0.01	0.00050	mg/L	2021-11-20	
Barium, total	0.0223	MAC = 2	0.0050	mg/L	2021-11-20	
Boron, total	< 0.0500	MAC = 5	0.0500	mg/L	2021-11-20	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010	mg/L	2021-11-20	



## TEST RESULTS

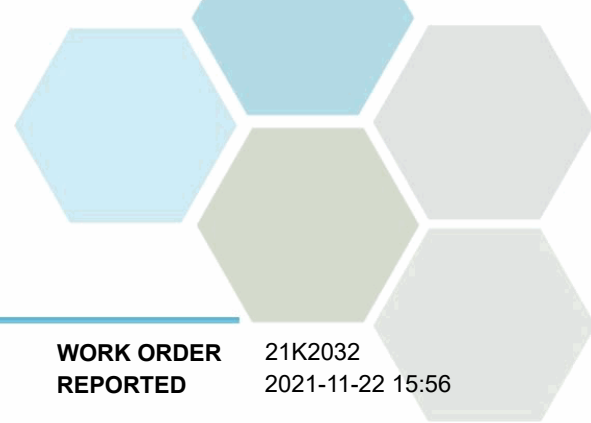
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Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
<b>Clearwell Outflow (21K2032-02)   Matrix: Water   Sampled: 2021-11-15 09:15, Continued</b>						
<i>Total Metals, Continued</i>						
Calcium, total	<b>34.9</b>	None Required	0.20	mg/L	2021-11-20	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2021-11-20	
Copper, total	<b>0.00188</b>	MAC = 2	0.00040	mg/L	2021-11-20	
Iron, total	< 0.010	AO ≤ 0.3	0.010	mg/L	2021-11-20	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2021-11-20	
Magnesium, total	<b>9.67</b>	None Required	0.010	mg/L	2021-11-20	
Manganese, total	<b>0.00067</b>	MAC = 0.12	0.00020	mg/L	2021-11-20	
Potassium, total	<b>2.33</b>	N/A	0.10	mg/L	2021-11-20	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2021-11-20	
Sodium, total	<b>12.7</b>	AO ≤ 200	0.10	mg/L	2021-11-20	
Strontium, total	<b>0.274</b>	7	0.0010	mg/L	2021-11-20	
Uranium, total	<b>0.00257</b>	MAC = 0.02	0.000020	mg/L	2021-11-20	
Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2021-11-20	

**Sample Qualifiers:**

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



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Glenmore Ellison Improvement District  
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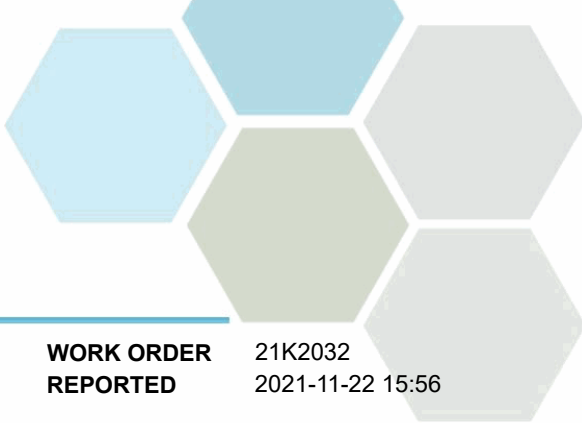
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Analysis Description	Method Ref.	Technique	Accredited	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Coliforms, Total in Water	SM 9222* (2017)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Colour, True in Water	SM 2120 C (2017)	Spectrophotometry (456 nm)	✓	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	✓	Kelowna
Cyanide, SAD in Water	ASTM D7511-12	Flow Injection with In-Line UV Digestion and Amperometry	✓	Kelowna
E. coli in Water	SM 9222* (2017)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	✓	N/A
Langelier Index in Water	SM 2330 B (2017)	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 (2017)	Electrometry	✓	Kelowna
Solids, Total Dissolved in Water	SM 1030 E (2017)	SM 1030 E (2011)		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 (2017)	Nephelometry	✓	Kelowna

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

### Glossary of Terms:

RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
°C	Degrees Celcius
AO	Aesthetic Objective
CFU/100 mL	Colony Forming Units per 100 millilitres
CU	Colour Units (referenced against a platinum cobalt standard)
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
MPN/100 mL	Most Probable Number per 100 millilitres
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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**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](mailto:bwhitehead@caro.ca)

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