CERTIFICATE OF ANALYSIS

REPORTED TO	Cherry Ridge Management 158 North Fork Road Cherryville, BC V0E 2G3		
ATTENTION	Melanie Staker	**WORK ORDER**	21K1857
PO NUMBER		**RECEIVED / TEMP**	2021-11-15 08:54 / 3.1°C
PROJECT	Creek Monitoring	**REPORTED**	2021-11-22 10:56
PROJECT INFO		**COC NUMBER**	No Number

Introduction:

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

Big Picture Sidekicks

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.

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

Authorized By:

Team CARO
Client Service Representative

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Cherry Ridge Management	**WORK ORDER**	21K1857
PROJECT	Creek Monitoring	**REPORTED**	2021-11-22 10:56

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
North Fork (21K1857-01) | Matrix: Water | Sampled: 2021-11-14 11:20						F1, FILT, PRES
Anions						
Bromide	< 0.10	N/A	0.10	mg/L	2021-11-17	
Chloride	**0.10**	AO ≤ 250	0.10	mg/L	2021-11-17	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	2021-11-17	
Nitrate (as N)	< 0.010	MAC = 10	0.010	mg/L	2021-11-17	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2021-11-17	
Sulfate	**9.8**	AO ≤ 500	1.0	mg/L	2021-11-17	
Calculated Parameters						
Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	N/A	0.0500	mg/L	N/A	
Dissolved Metals						
Aluminum, dissolved	**6.7**	N/A	1.0	µg/L	2021-11-18	
General Parameters						
Alkalinity, Total (as CaCO3)	**77.1**	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)	**77.1**	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	
Ammonia, Total (as N)	< 0.050	None Required	0.050	mg/L	2021-11-17	
Conductivity (EC)	**159**	N/A	2.0	µS/cm	2021-11-18	
Nitrogen, Total Kjeldahl	< 0.050	N/A	0.050	mg/L	2021-11-19	
pH	**7.68**	7.0-10.5	0.10	pH units	2021-11-18	HT2
Phosphorus, Total (as P)	**0.0116**	N/A	0.0050	mg/L	2021-11-17	
Phosphorus, Total Dissolved	**0.0072**	N/A	0.0050	mg/L	2021-11-19	
Turbidity	**0.55**	OG < 1	0.10	NTU	2021-11-16	
Microbiological Parameters						
Coliforms, Total	**78**	MAC = 0	1	MPN/100 mL	2021-11-15	
E. coli	**2**	MAC = 0	1	MPN/100 mL	2021-11-15	
1/2 Mile Creek (21K1857-02) | Matrix: Water | Sampled: 2021-11-14 12:10						F1, FILT, PRES
Anions						
Bromide	< 0.10	N/A	0.10	mg/L	2021-11-17	
Chloride	**0.24**	AO ≤ 250	0.10	mg/L	2021-11-17	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	2021-11-17	
Nitrate (as N)	< 0.010	MAC = 10	0.010	mg/L	2021-11-17	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2021-11-17	
Sulfate	**39.0**	AO ≤ 500	1.0	mg/L	2021-11-17	
Calculated Parameters						

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TEST RESULTS

REPORTED TO	Cherry Ridge Management	**WORK ORDER**	21K1857
PROJECT	Creek Monitoring	**REPORTED**	2021-11-22 10:56

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
1/2 Mile Creek (21K1857-02) | Matrix: Water | Sampled: 2021-11-14 12:10, Continued						F1, FILT, PRES
Calculated Parameters, Continued						
Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	N/A	0.0500	mg/L	N/A	
Dissolved Metals						
Aluminum, dissolved	**1.6**	N/A	1.0	µg/L	2021-11-18	
General Parameters						
Alkalinity, Total (as CaCO3)	**193**	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)	**193**	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	
Ammonia, Total (as N)	< 0.050	None Required	0.050	mg/L	2021-11-17	
Conductivity (EC)	**396**	N/A	2.0	µS/cm	2021-11-18	
Nitrogen, Total Kjeldahl	< 0.050	N/A	0.050	mg/L	2021-11-19	
pH	**8.03**	7.0-10.5	0.10	pH units	2021-11-18	HT2
Phosphorus, Total (as P)	**0.0117**	N/A	0.0050	mg/L	2021-11-17	
Phosphorus, Total Dissolved	**0.0096**	N/A	0.0050	mg/L	2021-11-17	
Turbidity	**0.14**	OG < 1	0.10	NTU	2021-11-16	
Microbiological Parameters						
Coliforms, Total	**35**	MAC = 0	1	MPN/100 mL	2021-11-15	
E. coli	< 1	MAC = 0	1	MPN/100 mL	2021-11-15	
Cherry Creek @ Hall (21K1857-03) | Matrix: Water | Sampled: 2021-11-14 11:47						F1, FILT, PRES
Anions						
Bromide	< 0.10	N/A	0.10	mg/L	2021-11-17	
Chloride	**2.01**	AO ≤ 250	0.10	mg/L	2021-11-17	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	2021-11-17	
Nitrate (as N)	**0.020**	MAC = 10	0.010	mg/L	2021-11-17	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2021-11-17	
Sulfate	**15.7**	AO ≤ 500	1.0	mg/L	2021-11-17	
Calculated Parameters						
Nitrate+Nitrite (as N)	**0.0202**	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	**0.132**	N/A	0.0500	mg/L	N/A	
Dissolved Metals						
Aluminum, dissolved	**4.4**	N/A	1.0	µg/L	2021-11-18	
General Parameters						
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	

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TEST RESULTS

REPORTED TO Cherry Ridge Management
PROJECT Creek Monitoring

WORK ORDER 21K1857
REPORTED 2021-11-22 10:56

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Cherry Creek @ Hall (21K1857-03) | Matrix: Water | Sampled: 2021-11-14 11:47, Continued						F1, FILT, PRES
General Parameters, Continued						
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	
Ammonia, Total (as N)	< 0.050	None Required	0.050	mg/L	2021-11-17	
Conductivity (EC)	**224**	N/A	2.0	µS/cm	2021-11-18	
Nitrogen, Total Kjeldahl	**0.112**	N/A	0.050	mg/L	2021-11-19	
pH	**7.86**	7.0-10.5	0.10	pH units	2021-11-18	HT2
Phosphorus, Total (as P)	**0.0162**	N/A	0.0050	mg/L	2021-11-17	
Phosphorus, Total Dissolved	**0.0111**	N/A	0.0050	mg/L	2021-11-17	
Turbidity	**3.01**	OG < 1	0.10	NTU	2021-11-16	
Microbiological Parameters						
Coliforms, Total	**308**	MAC = 0	1	MPN/100 mL	2021-11-15	
E. coli	**8**	MAC = 0	1	MPN/100 mL	2021-11-15	
Picnic Shuswap (21K1857-04) | Matrix: Water | Sampled: 2021-11-14 10:10						F1, FILT, PRES
Anions						
Bromide	< 0.10	N/A	0.10	mg/L	2021-11-17	
Chloride	**0.28**	AO ≤ 250	0.10	mg/L	2021-11-17	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	2021-11-17	
Nitrate (as N)	**0.016**	MAC = 10	0.010	mg/L	2021-11-17	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2021-11-17	
Sulfate	**5.8**	AO ≤ 500	1.0	mg/L	2021-11-17	
Calculated Parameters						
Nitrate+Nitrite (as N)	**0.0160**	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	N/A	0.0500	mg/L	N/A	
Dissolved Metals						
Aluminum, dissolved	**5.2**	N/A	1.0	µg/L	2021-11-18	
General Parameters						
Alkalinity, Total (as CaCO3)	**48.8**	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)	**48.8**	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	
Ammonia, Total (as N)	< 0.050	None Required	0.050	mg/L	2021-11-17	
Conductivity (EC)	**101**	N/A	2.0	µS/cm	2021-11-18	
Nitrogen, Total Kjeldahl	< 0.050	N/A	0.050	mg/L	2021-11-19	
pH	**7.51**	7.0-10.5	0.10	pH units	2021-11-18	HT2
Phosphorus, Total (as P)	**0.0071**	N/A	0.0050	mg/L	2021-11-19	

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TEST RESULTS

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Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Picnic Shuswap (21K1857-04) | Matrix: Water | Sampled: 2021-11-14 10:10, Continued						F1, FILT, PRES
General Parameters, Continued						
Phosphorus, Total Dissolved	< 0.0050	N/A	0.0050	mg/L	2021-11-19	
Turbidity	**0.73**	OG < 1	0.10	NTU	2021-11-16	
Microbiological Parameters						
Coliforms, Total	**1050**	MAC = 0	1	MPN/100 mL	2021-11-15	
E. coli	**1**	MAC = 0	1	MPN/100 mL	2021-11-15	
Ferry Creek (21K1857-05) | Matrix: Water | Sampled: 2021-11-14 10:50						F1, FILT, PRES
Anions						
Bromide	< 0.10	N/A	0.10	mg/L	2021-11-17	
Chloride	**1.06**	AO ≤ 250	0.10	mg/L	2021-11-17	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	2021-11-17	
Nitrate (as N)	< 0.010	MAC = 10	0.010	mg/L	2021-11-17	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2021-11-17	
Sulfate	**31.8**	AO ≤ 500	1.0	mg/L	2021-11-17	
Calculated Parameters						
Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	**0.0620**	N/A	0.0500	mg/L	N/A	
Dissolved Metals						
Aluminum, dissolved	**2.7**	N/A	1.0	µg/L	2021-11-18	
General Parameters						
Alkalinity, Total (as CaCO3)	**155**	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)	**155**	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	
Ammonia, Total (as N)	< 0.050	None Required	0.050	mg/L	2021-11-17	
Conductivity (EC)	**337**	N/A	2.0	µS/cm	2021-11-18	
Nitrogen, Total Kjeldahl	**0.062**	N/A	0.050	mg/L	2021-11-19	
pH	**8.07**	7.0-10.5	0.10	pH units	2021-11-18	HT2
Phosphorus, Total (as P)	**0.0117**	N/A	0.0050	mg/L	2021-11-19	
Phosphorus, Total Dissolved	**0.0105**	N/A	0.0050	mg/L	2021-11-19	
Turbidity	**0.27**	OG < 1	0.10	NTU	2021-11-16	
Microbiological Parameters						
Coliforms, Total	**411**	MAC = 0	1	MPN/100 mL	2021-11-15	
E. coli	**2**	MAC = 0	1	MPN/100 mL	2021-11-15	

TEST RESULTS

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Sample Qualifiers:

F1	The sample was not field-filtered and was therefore filtered through a 0.45 µm membrane in the laboratory and preserved with HNO3 prior to analysis for dissolved metals.
FILT	The sample has been filtered for TDP in the laboratory. Results may not reflect conditions at the time of sampling.
HT2	The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
PRES	Sample has been preserved for TDP in the laboratory and the holding time has been extended.

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Cherry Ridge Management	**WORK ORDER**	21K1857
PROJECT	Creek Monitoring	**REPORTED**	2021-11-22 10:56

Analysis Description	Method Ref.	Technique	Accredited	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	✓	Kelowna
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Coliforms, Total in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	✓	Kelowna
Dissolved Metals in Water	EPA 200.8 / EPA 6020B	0.45 µm Filtration / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Phosphorus, Total Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
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
AO	Aesthetic Objective
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
µg/L	Micrograms per litre
µS/cm	Microsiemens per centimetre
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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	Cherry Ridge Management	**WORK ORDER**	21K1857
PROJECT	Creek Monitoring	**REPORTED**	2021-11-22 10:56

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. The quality control (QC) data is available upon request

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