# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **REPORTED TO** | Campbell Scientific Canada Corp.<br>1030 Sugar Lake Rd<br>Cherryville, BC V0E 2G2 | | |
| **ATTENTION** | Claude Labine | **WORK ORDER** | 22F2031 |
| **PO NUMBER** | | **RECEIVED / TEMP** | 2022-06-14 13:41 / 8.5°C |
| **PROJECT** | Cherryville Water Stewart | **REPORTED** | 2022-06-21 15:12 |
| **PROJECT INFO** | | **COC NUMBER** | No # |

**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

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|---|---|---|---|
| **REPORTED TO** | Campbell Scientific Canada Corp. | **WORK ORDER** | 22F2031 |
| **PROJECT** | Cherryville Water Stewart | **REPORTED** | 2022-06-21 15:12 |

| Analyte | Result | Guideline | RL | Units | Analyzed | Qualifier |
|---|---|---|---|---|---|---|
| **Shuswap River @ Sihlis Rd (22F2031-01) \| Matrix: Water \| Sampled: 2022-06-14 10:20** | | | | | | PRES |
| ***Anions*** | | | | | | |
| Nitrate (as N) | **0.071** | MAC = 10 | 0.010 | mg/L | 2022-06-17 | |
| Nitrite (as N) | < 0.010 | MAC = 1 | 0.010 | mg/L | 2022-06-17 | |
| ***Calculated Parameters*** | | | | | | |
| Nitrate+Nitrite (as N) | **0.0710** | N/A | 0.0100 | mg/L | N/A | |
| Nitrogen, Total | **0.423** | N/A | 0.0500 | mg/L | N/A | |
| ***General Parameters*** | | | | | | |
| Ammonia, Total (as N) | < 0.050 | None Required | 0.050 | mg/L | 2022-06-16 | |
| Nitrogen, Total Kjeldahl | **0.352** | N/A | 0.050 | mg/L | 2022-06-19 | |
| Phosphorus, Total (as P) | **0.299** | N/A | 0.0050 | mg/L | 2022-06-17 | |
| Turbidity | **212** | OG < 1 | 0.10 | NTU | 2022-06-16 | |
| ***Microbiological Parameters*** | | | | | | |
| Coliforms, Total (Q-Tray) | **921** | MAC = 0 | 1 | MPN/100 mL | 2022-06-14 | |
| Coliforms, Fecal (Q-Tray) | **23** | N/A | 1 | MPN/100 mL | 2022-06-14 | |
| E. coli (Q-Tray) | **23** | MAC = 0 | 1 | MPN/100 mL | 2022-06-14 | |
| **Reiter Creek @ Shuswap River (22F2031-02) \| Matrix: Water \| Sampled: 2022-06-14 10:30** | | | | | | PRES |
| ***Anions*** | | | | | | |
| Nitrate (as N) | < 0.010 | MAC = 10 | 0.010 | mg/L | 2022-06-17 | |
| Nitrite (as N) | < 0.010 | MAC = 1 | 0.010 | mg/L | 2022-06-17 | |
| ***Calculated Parameters*** | | | | | | |
| Nitrate+Nitrite (as N) | < 0.0100 | N/A | 0.0100 | mg/L | N/A | |
| Nitrogen, Total | **4.11** | N/A | 0.100 | mg/L | N/A | |
| ***General Parameters*** | | | | | | |
| Ammonia, Total (as N) | < 0.050 | None Required | 0.050 | mg/L | 2022-06-16 | |
| Nitrogen, Total Kjeldahl | **4.11** | N/A | 0.050 | mg/L | 2022-06-19 | |
| Phosphorus, Total (as P) | **4.38** | N/A | 0.0050 | mg/L | 2022-06-20 | |
| Turbidity | **3360** | OG < 1 | 0.10 | NTU | 2022-06-20 | HT1 |
| ***Microbiological Parameters*** | | | | | | |
| Coliforms, Total (Q-Tray) | **1120** | MAC = 0 | 1 | MPN/100 mL | 2022-06-14 | |
| Coliforms, Fecal (Q-Tray) | **169** | N/A | 1 | MPN/100 mL | 2022-06-14 | |
| E. coli (Q-Tray) | **169** | MAC = 0 | 1 | MPN/100 mL | 2022-06-14 | |
| **Cherry Creek @ Shuswap River (22F2031-03) \| Matrix: Water \| Sampled: 2022-06-14 10:52** | | | | | | PRES |
| ***Anions*** | | | | | | |
| Nitrate (as N) | **0.065** | MAC = 10 | 0.010 | mg/L | 2022-06-17 | |
| Nitrite (as N) | < 0.010 | MAC = 1 | 0.010 | mg/L | 2022-06-17 | |

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# TEST RESULTS

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| Analyte | Result | Guideline | RL | Units | Analyzed | Qualifier |
|---|---|---|---|---|---|---|
| **Cherry Creek @ Shuswap River (22F2031-03) \| Matrix: Water \| Sampled: 2022-06-14 10:52, Continued** | | | | | | PRES |
| ***Calculated Parameters*** | | | | | | |
| Nitrate+Nitrite (as N) | **0.0654** | N/A | 0.0100 | mg/L | N/A | |
| Nitrogen, Total | **5.21** | N/A | 0.100 | mg/L | N/A | |
| ***General Parameters*** | | | | | | |
| Ammonia, Total (as N) | < 0.050 | None Required | 0.050 | mg/L | 2022-06-16 | |
| Nitrogen, Total Kjeldahl | **5.14** | N/A | 0.050 | mg/L | 2022-06-19 | |
| Phosphorus, Total (as P) | **3.51** | N/A | 0.0050 | mg/L | 2022-06-20 | |
| Turbidity | **1740** | OG < 1 | 0.10 | NTU | 2022-06-16 | |
| ***Microbiological Parameters*** | | | | | | |
| Coliforms, Total (Q-Tray) | **> 2420** | MAC = 0 | 1 | MPN/100 mL | 2022-06-14 | |
| Coliforms, Fecal (Q-Tray) | **565** | N/A | 1 | MPN/100 mL | 2022-06-14 | |
| E. coli (Q-Tray) | **565** | MAC = 0 | 1 | MPN/100 mL | 2022-06-14 | |
| **Ferry Creek @ Shuswap River (22F2031-04) \| Matrix: Water \| Sampled: 2022-06-14 11:04** | | | | | | PRES |
| ***Anions*** | | | | | | |
| Nitrate (as N) | < 0.010 | MAC = 10 | 0.010 | mg/L | 2022-06-17 | |
| Nitrite (as N) | < 0.010 | MAC = 1 | 0.010 | mg/L | 2022-06-17 | |
| ***Calculated Parameters*** | | | | | | |
| Nitrate+Nitrite (as N) | < 0.0100 | N/A | 0.0100 | mg/L | N/A | |
| Nitrogen, Total | **1.27** | N/A | 0.0500 | mg/L | N/A | |
| ***General Parameters*** | | | | | | |
| Ammonia, Total (as N) | < 0.050 | None Required | 0.050 | mg/L | 2022-06-16 | |
| Nitrogen, Total Kjeldahl | **1.27** | N/A | 0.050 | mg/L | 2022-06-19 | |
| Phosphorus, Total (as P) | **0.824** | N/A | 0.0050 | mg/L | 2022-06-20 | |
| Turbidity | **304** | OG < 1 | 0.10 | NTU | 2022-06-16 | |
| ***Microbiological Parameters*** | | | | | | |
| Coliforms, Total (Q-Tray) | **1050** | MAC = 0 | 1 | MPN/100 mL | 2022-06-14 | |
| Coliforms, Fecal (Q-Tray) | **48** | N/A | 1 | MPN/100 mL | 2022-06-14 | |
| E. coli (Q-Tray) | **36** | MAC = 0 | 1 | MPN/100 mL | 2022-06-14 | |
| **Shuswap River @ BC Hydro Site (22F2031-05) \| Matrix: Water \| Sampled: 2022-06-14 11:20** | | | | | | PRES |
| ***Anions*** | | | | | | |
| Nitrate (as N) | **0.061** | MAC = 10 | 0.010 | mg/L | 2022-06-17 | |
| Nitrite (as N) | < 0.010 | MAC = 1 | 0.010 | mg/L | 2022-06-17 | |
| ***Calculated Parameters*** | | | | | | |
| Nitrate+Nitrite (as N) | **0.0609** | N/A | 0.0100 | mg/L | N/A | |
| Nitrogen, Total | **0.860** | N/A | 0.0500 | mg/L | N/A | |

# TEST RESULTS

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|---|---|---|---|
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| **PROJECT** | Cherryville Water Stewart | **REPORTED** | 2022-06-21 15:12 |

| Analyte | Result | Guideline | RL | Units | Analyzed | Qualifier |
|---|---|---|---|---|---|---|
| **Shuswap River @ BC Hydro Site (22F2031-05) \| Matrix: Water \| Sampled: 2022-06-14 11:20, Continued** | | | | | | PRES |
| ***General Parameters*** | | | | | | |
| Ammonia, Total (as N) | < 0.050 | None Required | 0.050 | mg/L | 2022-06-16 | |
| Nitrogen, Total Kjeldahl | **0.799** | N/A | 0.050 | mg/L | 2022-06-19 | |
| Phosphorus, Total (as P) | **0.423** | N/A | 0.0050 | mg/L | 2022-06-20 | |
| Turbidity | **302** | OG < 1 | 0.10 | NTU | 2022-06-16 | |
| ***Microbiological Parameters*** | | | | | | |
| Coliforms, Total (Q-Tray) | **> 2420** | MAC = 0 | 1 | MPN/100 mL | 2022-06-14 | |
| Coliforms, Fecal (Q-Tray) | **984** | N/A | 1 | MPN/100 mL | 2022-06-14 | |
| E. coli (Q-Tray) | **984** | MAC = 0 | 1 | MPN/100 mL | 2022-06-14 | |

**Sample Qualifiers:**

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|---|---|
| HT1 | The sample was prepared and/or analyzed past the recommended holding time. |
| PRES | Sample has been preserved for NH3, TKN + TP in the laboratory and the holding time has been extended. |

# APPENDIX 1: SUPPORTING INFORMATION

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|---|---|---|---|
| **REPORTED TO** | Campbell Scientific Canada Corp. | **WORK ORDER** | 22F2031 |
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| Analysis Description | Method Ref. | Technique | Accredited | Location |
|---|---|---|---|---|
| Ammonia, Total in Water | SM 4500-NH3 G* (2017) | Automated Colorimetry (Phenate) | ✓ | Kelowna |
| Anions in Water | SM 4110 B (2017) | Ion Chromatography | ✓ | Kelowna |
| Coliforms, Fecal in Water | NA / SM 9223 (2017) | Quanti-Tray / Enzyme Substrate Endo Agar | ✓ | Kelowna |
| Coliforms, Total in Water | NA / SM 9223 (2017) | Quanti-Tray / Enzyme Substrate Endo Agar | ✓ | Kelowna |
| 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 |
| 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 |
| > | Greater than the specified Result |
| 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) |
| 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***

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| **REPORTED TO** | Campbell Scientific Canada Corp. | **WORK ORDER** | 22F2031 |
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**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.*