

## CERTIFICATE OF ANALYSIS

**REPORTED TO** McElhanney Ltd. - Kamloops  
293 1st Ave  
Kamloops, BC V2C 3J3

**ATTENTION** bradley Jackman

**PO NUMBER**

**PROJECT** 2431.01069-00

**PROJECT INFO**

**WORK ORDER** 24D0821

**RECEIVED / TEMP** 2024-04-05 10:45 / 10.5°C

**REPORTED** 2024-04-10 13:08

**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.

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 [hhannaoui@caro.ca](mailto:hhannaoui@caro.ca)

### Authorized By:

Hanane El Hannaoui  
Junior Account Manager

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## TEST RESULTS

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Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Louis Creek Pit-SGSB (24D0821-01)   Matrix: Soil   Sampled: 2024-04-02</b>					
<i>General Parameters</i>					
Sulfate, Water-Soluble	< 0.050	0.050	%	2024-04-10	
Chloride, Water-Soluble	< 0.002	0.002	%	2024-04-10	



## APPENDIX 1: SUPPORTING INFORMATION

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Analysis Description	Method Ref.	Technique	Accredited	Location
Chloride, Water Soluble in Soil	ASTM C1218-17	Hot Water Extraction / Hot Water Extraction		Richmond
Sulfate, Water-Soluble in Soil	CSA A23.2-3B / CSA A23.2-2B	Extraction (HCl) / Gravimetry (Barium Sulfate Precipitation)		Richmond

### Glossary of Terms:

RL	Reporting Limit (default)
%	Percent
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
ASTM	ASTM International Test Methods
CSA	Canadian Standards Association Chemical Test Methods

### General Comments:

The results in this report apply to the received 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. Caro will dispose of all samples within 30 days of sample receipt, unless otherwise agreed.

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: [hhannaoui@caro.ca](mailto:hhannaoui@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

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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
<b>General Parameters, Batch B4D1997</b>									
<b>Blank (B4D1997-BLK1)</b> Prepared: 2024-04-09, Analyzed: 2024-04-09									
Sulfate, Water-Soluble	< 0.050	0.050 %							
<b>General Parameters, Batch B4D2026</b>									
<b>Blank (B4D2026-BLK1)</b> Prepared: 2024-04-09, Analyzed: 2024-04-10									
Chloride, Water-Soluble	< 0.002	0.002 %							



**THURBER ENGINEERING LTD.**

Reviewed	( X )
Reviewed as noted	( )
Revise and resubmit	( )
Not reviewed	( )

Date: 04/11/24

Reviewed By: NICK STAUBER  


This acknowledges review of the information provided. This review does not imply approval of the construction methodology proposed by the Contractor, and does not relieve the Contractor of the responsibility for meeting the requirements of the contract documents and for employing construction practices that are appropriate for the site-specific ground conditions.