



## CERTIFICATE OF ANALYSIS

**REPORTED TO** First Nations Health Authority (Interior)  
Suite 770 175 2nd Avenue  
Kamloops, BC V2C 5W1

**ATTENTION** Patti Joyce

**PO NUMBER** 0000002803

**PROJECT** Sugar Cane Williams Lake CWS

**PROJECT INFO**

**WORK ORDER** 22D1734

**RECEIVED / TEMP** 2022-04-13 11:45 / 6°C

**REPORTED** 2022-04-29 11:07

**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.

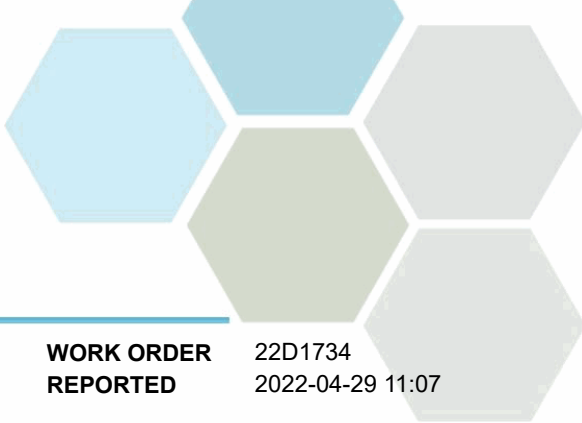
*If you have any questions or concerns, please contact me at [sgulenchyn@caro.ca](mailto:sgulenchyn@caro.ca)*

#### **Authorized By:**

Sara Gulenchyn, B.Sc, P.Chem.  
Client Services Manager

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



# TEST RESULTS

**REPORTED TO PROJECT** First Nations Health Authority (Interior)  
Sugar Cane Williams Lake CWS

**WORK ORDER REPORTED** 22D1734  
2022-04-29 11:07

Analyte	Result	Guideline	Guideline 2	RL Units	Analyzed	Qualifier
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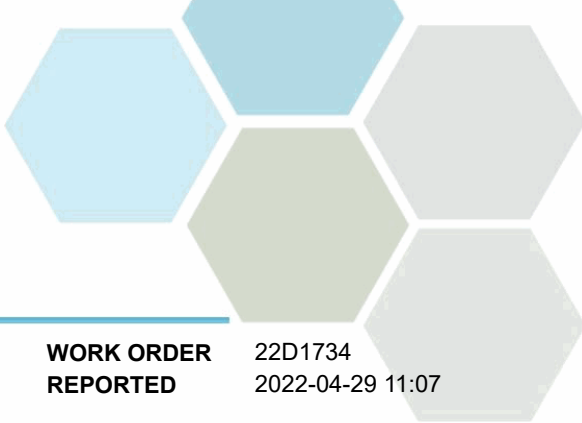
**WLFN Health Centre 477-15976 (22D1734-01) | Matrix: Water | Sampled: 2022-04-12 13:50**

**Calculated Parameters**

Hardness, Total (as CaCO3)	208	None Required		0.500mg/L		N/A
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**Total Metals**

Aluminum, total	< 0.0050	OG < 0.1		0.0050mg/L		2022-04-28
Antimony, total	< 0.00020	MAC = 0.006		0.00020mg/L		2022-04-28
Arsenic, total	0.00649	MAC = 0.01		0.00050mg/L		2022-04-28
Barium, total	< 0.0050	MAC = 2		0.0050mg/L		2022-04-28
Beryllium, total	< 0.00010	N/A		0.00010mg/L		2022-04-28
Bismuth, total	< 0.00010	N/A		0.00010mg/L		2022-04-28
Boron, total	0.292	MAC = 5		0.0500mg/L		2022-04-28
Cadmium, total	< 0.000010	MAC = 0.005		0.000010mg/L		2022-04-28
Calcium, total	31.2	None Required		0.20mg/L		2022-04-28
Chromium, total	0.00072	MAC = 0.05		0.00050mg/L		2022-04-28
Cobalt, total	< 0.00010	N/A		0.00010mg/L		2022-04-28
Copper, total	0.0326	MAC = 2	AO <= 1	0.00040mg/L		2022-04-28
Iron, total	< 0.010	AO <= 0.3		0.010mg/L		2022-04-28
Lead, total	0.00059	MAC = 0.005		0.00020mg/L		2022-04-28
Lithium, total	0.00166	N/A		0.00010mg/L		2022-04-28
Magnesium, total	31.5	None Required		0.010mg/L		2022-04-28
Manganese, total	< 0.00020	MAC = 0.12	AO <= 0.02	0.00020mg/L		2022-04-28
Molybdenum, total	0.0243	N/A		0.00010mg/L		2022-04-28
Nickel, total	0.00119	N/A		0.00040mg/L		2022-04-28
Phosphorus, total	0.239	N/A		0.050mg/L		2022-04-28
Potassium, total	6.57	N/A		0.10mg/L		2022-04-28
Selenium, total	< 0.00050	MAC = 0.05		0.00050mg/L		2022-04-28
Silicon, total	12.4	N/A		1.0mg/L		2022-04-28
Silver, total	< 0.000050	None Required		0.000050mg/L		2022-04-28
Sodium, total	121	AO <= 200		0.10mg/L		2022-04-28
Strontium, total	0.231	MAC = 7		0.0010mg/L		2022-04-28
Sulfur, total	31.6	N/A		3.0mg/L		2022-04-28
Tellurium, total	< 0.00050	N/A		0.00050mg/L		2022-04-28
Thallium, total	< 0.000020	N/A		0.000020mg/L		2022-04-28
Thorium, total	< 0.00010	N/A		0.00010mg/L		2022-04-28
Tin, total	< 0.00004	N/A		0.00020mg/L		2022-04-28
Titanium, total	< 0.0050	N/A		0.0050mg/L		2022-04-28
Tungsten, total	< 0.0002	N/A		0.0010mg/L		2022-04-28
Uranium, total	0.00403	MAC = 0.02		0.000020mg/L		2022-04-28
Vanadium, total	< 0.0010	N/A		0.0050mg/L		2022-04-28
Zinc, total	< 0.0040	AO <= 5		0.0040mg/L		2022-04-28
Zirconium, total	< 0.00010	N/A		0.00010mg/L		2022-04-28



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** First Nations Health Authority (Interior)  
Sugar Cane Williams Lake CWS

**WORK ORDER REPORTED** 22D1734  
2022-04-29 11:07

Analysis Description	Method Ref.	Technique	Accredited	Location
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	✓	N/A
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO <sub>3</sub> +HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond

*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
OG	Operational Guideline (treated water)
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 \(Health Canada, June 2019\)](#)

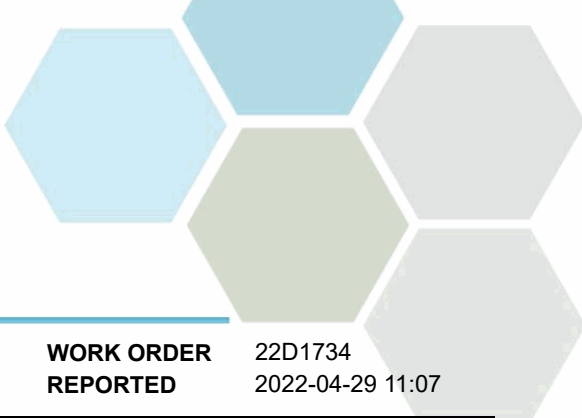
*Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user*

### 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.

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

**REPORTED TO PROJECT** First Nations Health Authority (Interior)  
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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:

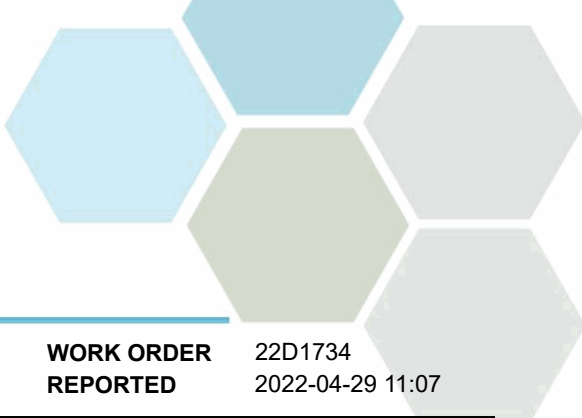
- **Method Blank (Blk):** A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup):** An additional or second portion of a randomly selected 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
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**Total Metals, Batch B2D2883**

Blank (B2D2883-BLK1)			Prepared: 2022-04-28, Analyzed: 2022-04-28						
Aluminum, total	< 0.0050	0.0050 mg/L							
Antimony, total	< 0.00020	0.00020 mg/L							
Arsenic, total	< 0.00050	0.00050 mg/L							
Barium, total	< 0.0050	0.0050 mg/L							
Beryllium, total	< 0.00010	0.00010 mg/L							
Bismuth, total	< 0.00010	0.00010 mg/L							
Boron, total	< 0.0500	0.0500 mg/L							
Cadmium, total	< 0.000010	0.000010 mg/L							
Calcium, total	< 0.20	0.20 mg/L							
Chromium, total	< 0.00050	0.00050 mg/L							
Cobalt, total	< 0.00010	0.00010 mg/L							
Copper, total	< 0.00040	0.00040 mg/L							
Iron, total	< 0.010	0.010 mg/L							
Lead, total	< 0.00020	0.00020 mg/L							
Lithium, total	< 0.00010	0.00010 mg/L							
Magnesium, total	< 0.010	0.010 mg/L							
Manganese, total	< 0.00020	0.00020 mg/L							
Molybdenum, total	< 0.00010	0.00010 mg/L							
Nickel, total	< 0.00040	0.00040 mg/L							
Phosphorus, total	< 0.050	0.050 mg/L							
Potassium, total	< 0.10	0.10 mg/L							
Selenium, total	< 0.00050	0.00050 mg/L							
Silicon, total	< 1.0	1.0 mg/L							
Silver, total	< 0.000050	0.000050 mg/L							
Sodium, total	< 0.10	0.10 mg/L							
Strontium, total	< 0.0010	0.0010 mg/L							
Sulfur, total	< 3.0	3.0 mg/L							
Tellurium, total	< 0.00050	0.00050 mg/L							
Thallium, total	< 0.000020	0.000020 mg/L							
Thorium, total	< 0.00010	0.00010 mg/L							
Tin, total	< 0.00004	0.00004 mg/L							
Titanium, total	< 0.0050	0.0050 mg/L							
Tungsten, total	< 0.0002	0.0002 mg/L							
Uranium, total	< 0.000020	0.000020 mg/L							
Vanadium, total	< 0.0010	0.0010 mg/L							
Zinc, total	< 0.0040	0.0040 mg/L							

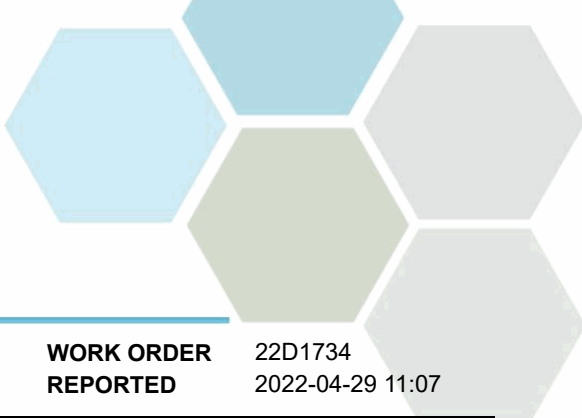


## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** First Nations Health Authority (Interior)  
Sugar Cane Williams Lake CWS

**WORK ORDER REPORTED** 22D1734  
2022-04-29 11:07

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Total Metals, Batch B2D2883, Continued</b>									
<b>Blank (B2D2883-BLK1), Continued</b>					Prepared: 2022-04-28, Analyzed: 2022-04-28				
Zirconium, total	< 0.00010	0.00010 mg/L							
<b>LCS (B2D2883-BS1)</b>					Prepared: 2022-04-28, Analyzed: 2022-04-28				
Aluminum, total	0.0226	0.0050 mg/L	0.0200		113	80-120			
Antimony, total	0.0197	0.00020 mg/L	0.0200		98	80-120			
Arsenic, total	0.0192	0.00050 mg/L	0.0200		96	80-120			
Barium, total	0.0194	0.0050 mg/L	0.0200		97	80-120			
Beryllium, total	0.0198	0.00010 mg/L	0.0200		99	80-120			
Bismuth, total	0.0186	0.00010 mg/L	0.0200		93	80-120			
Boron, total	< 0.0500	0.0500 mg/L	0.0200		112	80-120			
Cadmium, total	0.0195	0.000010 mg/L	0.0200		97	80-120			
Calcium, total	1.73	0.20 mg/L	2.00		87	80-120			
Chromium, total	0.0192	0.00050 mg/L	0.0200		96	80-120			
Cobalt, total	0.0192	0.00010 mg/L	0.0200		96	80-120			
Copper, total	0.0189	0.00040 mg/L	0.0200		95	80-120			
Iron, total	1.95	0.010 mg/L	2.00		97	80-120			
Lead, total	0.0184	0.00020 mg/L	0.0200		92	80-120			
Lithium, total	0.0201	0.00010 mg/L	0.0200		100	80-120			
Magnesium, total	1.94	0.010 mg/L	2.00		97	80-120			
Manganese, total	0.0195	0.00020 mg/L	0.0200		98	80-120			
Molybdenum, total	0.0192	0.00010 mg/L	0.0200		96	80-120			
Nickel, total	0.0190	0.00040 mg/L	0.0200		95	80-120			
Phosphorus, total	1.98	0.050 mg/L	2.00		99	80-120			
Potassium, total	1.96	0.10 mg/L	2.00		98	80-120			
Selenium, total	0.0167	0.00050 mg/L	0.0200		84	80-120			
Silicon, total	1.8	1.0 mg/L	2.00		92	80-120			
Silver, total	0.0193	0.000050 mg/L	0.0200		97	80-120			
Sodium, total	2.16	0.10 mg/L	2.00		108	80-120			
Strontium, total	0.0189	0.0010 mg/L	0.0200		94	80-120			
Sulfur, total	4.5	3.0 mg/L	5.00		90	80-120			
Tellurium, total	0.0191	0.00050 mg/L	0.0200		96	80-120			
Thallium, total	0.0187	0.000020 mg/L	0.0200		94	80-120			
Thorium, total	0.0184	0.00010 mg/L	0.0200		92	80-120			
Tin, total	0.0199	0.00004 mg/L	0.0200		100	80-120			
Titanium, total	0.0193	0.0050 mg/L	0.0200		96	80-120			
Tungsten, total	0.0180	0.0002 mg/L	0.0200		90	80-120			
Uranium, total	0.0179	0.000020 mg/L	0.0200		89	80-120			
Vanadium, total	0.0193	0.0010 mg/L	0.0200		96	80-120			
Zinc, total	0.0191	0.0040 mg/L	0.0200		96	80-120			
Zirconium, total	0.0200	0.00010 mg/L	0.0200		100	80-120			
<b>Reference (B2D2883-SRM1)</b>					Prepared: 2022-04-28, Analyzed: 2022-04-28				
Aluminum, total	0.209	0.0050 mg/L	0.198		105	70-130			
Antimony, total	0.0234	0.00020 mg/L	0.0230		102	70-130			
Arsenic, total	0.0200	0.00050 mg/L	0.0200		100	70-130			
Barium, total	0.0154	0.0050 mg/L	0.0161		96	70-130			
Beryllium, total	0.00387	0.00010 mg/L	0.00384		101	70-130			
Boron, total	0.186	0.0500 mg/L	0.191		98	70-130			
Cadmium, total	0.00390	0.000010 mg/L	0.00404		97	70-130			
Calcium, total	0.81	0.20 mg/L	0.938		87	70-130			
Chromium, total	0.0251	0.00050 mg/L	0.0256		98	70-130			
Cobalt, total	0.0213	0.00010 mg/L	0.0214		100	70-130			
Copper, total	0.0308	0.00040 mg/L	0.0322		96	70-130			
Iron, total	0.059	0.010 mg/L	0.0580		102	70-130			
Lead, total	0.00738	0.00020 mg/L	0.00796		93	70-130			
Lithium, total	0.00999	0.00010 mg/L	0.0102		98	70-130			



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** First Nations Health Authority (Interior)  
Sugar Cane Williams Lake CWS

**WORK ORDER REPORTED** 22D1734  
2022-04-29 11:07

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Total Metals, Batch B2D2883, Continued</b>									
<b>Reference (B2D2883-SRM1), Continued</b>					Prepared: 2022-04-28, Analyzed: 2022-04-28				
Magnesium, total	0.108	0.010 mg/L	0.112		97	70-130			
Manganese, total	0.0117	0.00020 mg/L	0.0120		97	70-130			
Molybdenum, total	0.0431	0.00010 mg/L	0.0438		98	70-130			
Nickel, total	0.0375	0.00040 mg/L	0.0394		95	70-130			
Potassium, total	0.80	0.10 mg/L	0.820		98	70-130			
Selenium, total	0.0988	0.00050 mg/L	0.117		84	70-130			
Sodium, total	0.61	0.10 mg/L	0.490		125	70-130			
Strontium, total	0.269	0.0010 mg/L	0.276		97	70-130			
Thallium, total	0.0115	0.000020 mg/L	0.0118		98	70-130			
Uranium, total	0.00927	0.000020 mg/L	0.00970		96	70-130			
Vanadium, total	0.0273	0.0010 mg/L	0.0274		100	70-130			
Zinc, total	0.0812	0.0040 mg/L	0.0884		92	70-130			





London, BC V6V 2K9  
Vancouver, BC V1X 5C3  
Edmonton, AB T5S 1H7

## CHAIN OF CUSTODY RECORD

COC#

RELINQUISHED BY:

DATE: Apr 12/22  
TIME:

RECEIVED BY: Rokkothey

DATE: 4/12/22  
TIME: 11:00

**REPORT TO:**  
COMPANY: First Nations Health Authority  
ADDRESS: Box 4887  
Williams Lake, BC V2G 2V8  
CONTACT: Patti Joyce  
TEL/FAX: 250-298-9136  
DELIVERY METHOD: EMAIL  MAIL  OTHER\*   
DATA FORMAT: EXCEL  WATERTRAX  ESdat   
EQUS  BC EMS  OTHER\*   
EMAIL 1: Patti.Joyce@fnha.ca  
EMAIL 2: casey.neathway@fnha.ca  
EMAIL 3: bernice.debert@fnha.ca

**INVOICE TO:**  
NAME AS REPORT TO   
COMPANY: First Nations Health Authority  
ADDRESS: 501 - 100 Park Royal South  
Vancouver, BC V7T 1A2  
CONTACT: Bernice Debert  
TEL/FAX: 250-851-4836  
DELIVERY METHOD: EMAIL  MAIL  OTHER\*   
EMAIL 1: bernice.debert@fnha.ca  
EMAIL 2: AP@fnha.ca  
EMAIL 3:  
PO #: contract #000002803

**TURNAROUND TIME REQUESTED:**  
Routine: (5-7 Days)   
Rush: 1 Day\*  2 Day\*  3 Day\*   
Other\*  
\*Contact Lab To Confirm. Surcharge May Apply

**REGULATORY APPLICATION:**  
Show on Report  
Canadian Drinking Water Quality  BC WQG  BC HWR   
BC CSR Soil: WL  AL  PL  RL-LD  RL-HD  CL  IL   
BC CSR Water: AW  IW  LW  DW   
CCME: Other:

**PROJECT NUMBER / INFO:**  
A: Biohazard D: Asbestos G: Strong Odour  
B: Cyanide E: Heavy Metals H: High Contamination  
C: PCBs F: Flammable I: Other (please specify\*)

### ANALYSES REQUESTED:

\*\* If you would like to sign up for ClientConnect and/or EnviroChain, CARO's online service offerings, please check here:

CLIENT SAMPLE ID:	MATRIX:				CONTAINER QTY	SAMPLING:		COMMENTS:		
	DRINKING WATER	OTHER WATER	SOIL	OTHER		DATE	TIME	CHLORINATED	FILTERED	PRESERVED
10 WLFN Health Centre 477-15976	<input checked="" type="checkbox"/>				1	2022-04-12	13:50	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

BTEX	VPH	PHC F1	VOC	VPH	PHC F2-F4	PAH	L/HEPH	PHENOLS Chlorinated	Non-Chlor.	PCB	GLYCOLS	HAA	PESTICIDES	ACID HERBICIDES	METALS - WATER TOTAL	Hg	METALS - WATER DISSOLVED	Hg	METALS - SOIL (SALM)	inc. pH	pH	EC	ALK	TSS	VSS	TDS	BOD	COD	TOG	MOG	FECAL COLIFORMS	HPC	TOTAL COLIFORMS	E. coli	ASBESTOS	FNHA Standard Package A (Gen & metals)	FNHA Standard Package B (metals only)	FNHA Standard Package C (THM & HAA)	HOLD	POSSIBLE SAMPLE HAZARD CODE(S)			

**SHIPPING INSTRUCTIONS:** Return Cooler(s)   
Supplies Needed:

**SAMPLE RETENTION:**  
30 Days (default)   
60 Days  90 Days   
Other (surcharges will apply):

**\* OTHER INSTRUCTIONS:**  
If you would like to talk to a real live Scientist about your project requirements, please check here:

**SAMPLE RECEIPT CONDITION:**  
COOLER 1 (°C): 6.4 ICE: Y  N   
COOLER 2 (°C): ICE: Y  N   
COOLER 3 (°C): ICE: Y  N   
CUSTODY SEAL INTACT: NA  Y  N