



CERTIFICATE OF ANALYSIS

REPORTED TO	Stettler, Town of (Alberta) 5031 - 50 Street Stettler, AB T0C 2L0	WORK ORDER	9010672
ATTENTION	Veronica Salmon	RECEIVED / TEMP REPORTED	2019-01-10 09:45 / 9°C
PO NUMBER		REPORTED	2019-01-31 17:10
PROJECT	Distribution System - Biannual Analysis	COC NUMBER	08264
PROJECT INFO			

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 17025:2005 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.

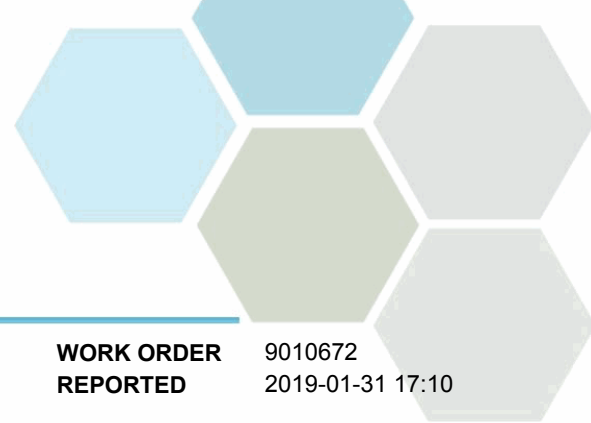
If you have any questions or concerns, please contact me at

Authorized By:

Alexander Dobbie
Client Service Representative

1-888-311-8846 | 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

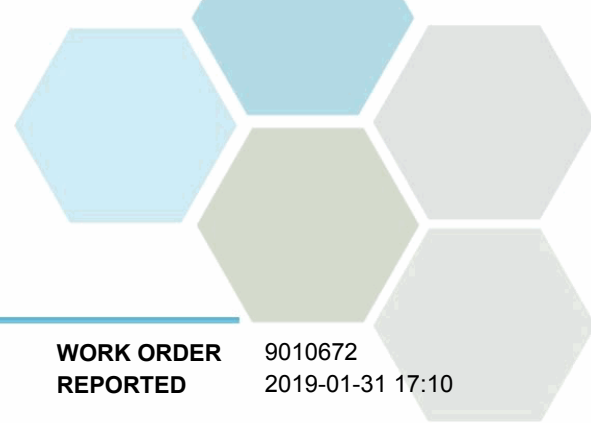


TEST RESULTS

REPORTED TO PROJECT Stettler, Town of (Alberta)
Distribution System - Biannual Analysis

WORK ORDER REPORTED 9010672
2019-01-31 17:10

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
G.T. Hydraulic (9010672-01) Matrix: Water Sampled: 2019-01-09 10:15					
Acid Herbicides					
2,4-D	< 0.00010	MAC = 0.1	0.00010 mg/L	2019-01-28	
Dicamba	< 0.00010	MAC = 0.12	0.00010 mg/L	2019-01-28	
MCPA	< 0.00020	MAC = 0.1	0.00020 mg/L	2019-01-28	
Picloram	< 0.00010	MAC = 0.19	0.00010 mg/L	2019-01-28	
Anions					
Bromate	< 0.010	MAC = 0.01	0.010 mg/L	2019-01-11	
Chlorate	< 0.50	MAC = 1	0.50 mg/L	2019-01-11	
Chloride	9.83	AO ≤ 250	0.50 mg/L	2019-01-11	
Chlorite	< 0.50	MAC = 1	0.50 mg/L	2019-01-11	
Fluoride	0.81	MAC = 1.5	0.10 mg/L	2019-01-11	
Nitrate (as N)	0.232	MAC = 10	0.050 mg/L	2019-01-11	
Nitrite (as N)	< 0.050	MAC = 1	0.050 mg/L	2019-01-11	
Sulfate	72.6	AO ≤ 500	1.0 mg/L	2019-01-11	
Calculated Parameters					
Total Trihalomethanes	0.0532	MAC = 0.1	0.00400 mg/L		N/A
Chloramines	1.39	MAC = 3	0.0200 mg/L		N/A
Hardness, Total (as CaCO ₃)	220	None Required	0.500 mg/L		N/A
Ion Balance	92.4	N/A	%		N/A
Nitrate+Nitrite (as N)	0.232	N/A	0.0500 mg/L		N/A
Solids, Total Dissolved	290	AO ≤ 500	2.00 mg/L		N/A
Chlorinated Phenols					
2,4-Dichlorophenol	< 0.00020	AO ≤ 0.0003	0.00020 mg/L	2019-01-18	
2,4,6-Trichlorophenol	< 0.00050	AO ≤ 0.002	0.00050 mg/L	2019-01-18	
2,3,4,6-Tetrachlorophenol	< 0.00050	AO ≤ 0.001	0.00050 mg/L	2019-01-18	
Pentachlorophenol	< 0.00050	AO ≤ 0.03	0.00050 mg/L	2019-01-18	
Dissolved Metals					
Calcium, dissolved	57.2	N/A	0.20 mg/L	2019-01-23	
Iron, dissolved	< 0.010	N/A	0.010 mg/L	2019-01-23	
Magnesium, dissolved	18.8	N/A	0.010 mg/L	2019-01-23	
Manganese, dissolved	0.00104	N/A	0.00020 mg/L	2019-01-23	
Potassium, dissolved	1.77	N/A	0.10 mg/L	2019-01-23	
Sodium, dissolved	15.6	N/A	0.10 mg/L	2019-01-23	
General Parameters					
Alkalinity, Total (as CaCO ₃)	185	N/A	2.0 mg/L	2019-01-11	
Bicarbonate (HCO ₃)	226	N/A	2.0 mg/L	2019-01-11	
Carbonate (CO ₃)	< 2.0	N/A	2.0 mg/L	2019-01-11	
Hydroxide (OH)	< 2.0	N/A	2.0 mg/L	2019-01-11	
Ammonia, Total (as N)	0.534	None Required	0.050 mg/L	2019-01-16	
Carbon, Total Organic	2.36	N/A	0.50 mg/L	2019-01-17	

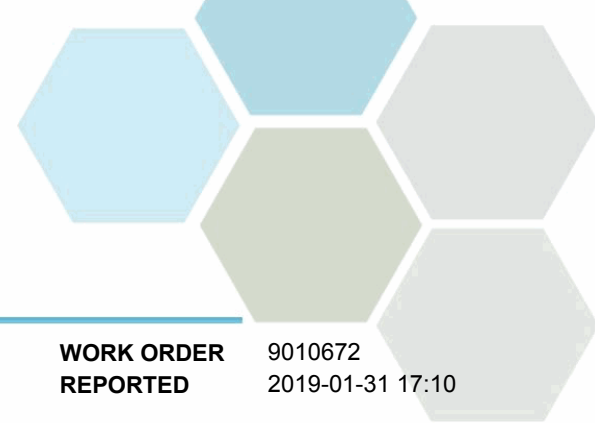


TEST RESULTS

REPORTED TO PROJECT Stettler, Town of (Alberta)
Distribution System - Biannual Analysis

WORK ORDER REPORTED 9010672
2019-01-31 17:10

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
G.T. Hydraulic (9010672-01) Matrix: Water Sampled: 2019-01-09 10:15, Continued					
<i>General Parameters, Continued</i>					
Chlorine, Total	1.46	None Required	0.02 mg/L	2019-01-11	HT2
Chlorine, Free	0.07	N/A	0.02 mg/L	2019-01-11	HT2
Colour, True	< 5.0	AO ≤ 15	5.0 CU	2019-01-10	
Conductivity (EC)	509	N/A	2.0 µS/cm	2019-01-16	
Cyanide, Free	< 0.0050	MAC = 0.2	0.0050 mg/L	2019-01-24	
Nitritotriacetic Acid	< 0.20	MAC = 0.4	0.20 mg/L	2019-01-16	
pH	7.48	7.0-10.5	0.10 pH units	2019-01-11	HT1
Sulfide, Total	< 0.020	AO ≤ 0.05	0.020 mg/L	2019-01-11	
Turbidity	< 0.10	OG < 1	0.10 NTU	2019-01-10	
<i>Microbiological Parameters</i>					
Microcystin, total	< 0.00014	MAC = 0.0015	0.00014 mg/L	2019-01-11	
<i>Miscellaneous Herbicides</i>					
Glyphosate	< 0.050	MAC = 0.28	0.050 mg/L	2019-01-23	
<i>Pesticides, Herbicides, and Fungicides</i>					
Atrazine and metabolites	< 0.000100	MAC = 0.005	0.000100 mg/L	2019-01-17	
Azinphos-methyl	< 0.000200	MAC = 0.02	0.000200 mg/L	2019-01-17	
Bromoxynil	< 0.000200	MAC = 0.005	0.000200 mg/L	2019-01-17	
Chlorpyrifos	< 0.000010	MAC = 0.09	0.000010 mg/L	2019-01-17	
Cyanazine	< 0.000100	N/A	0.000100 mg/L	2019-01-17	
Diazinon	< 0.000020	MAC = 0.02	0.000020 mg/L	2019-01-17	
Diclofop-methyl	< 0.000100	MAC = 0.009	0.000100 mg/L	2019-01-17	
Dimethoate	< 0.000200	MAC = 0.02	0.000200 mg/L	2019-01-17	
Diuron	< 0.000200	MAC = 0.15	0.000200 mg/L	2019-01-17	
Malathion	< 0.000100	MAC = 0.19	0.000100 mg/L	2019-01-17	
Methoxychlor	< 0.000050	N/A	0.000050 mg/L	2019-01-17	
Metolachlor	< 0.000100	MAC = 0.05	0.000100 mg/L	2019-01-17	
Metribuzin	< 0.000200	MAC = 0.08	0.000200 mg/L	2019-01-17	
Phorate	< 0.000100	MAC = 0.002	0.000100 mg/L	2019-01-17	
Simazine	< 0.000200	MAC = 0.01	0.000200 mg/L	2019-01-17	
Terbufos	< 0.000100	MAC = 0.001	0.000100 mg/L	2019-01-17	
Triallate	< 0.000100	N/A	0.000100 mg/L	2019-01-17	
Trifluralin	< 0.000200	MAC = 0.045	0.000200 mg/L	2019-01-17	
<i>Polycyclic Aromatic Hydrocarbons (PAH)</i>					
Benzo(a)pyrene	0.031	MAC = 0.04	0.010 µg/L	2019-01-14	
<i>Total Metals</i>					
Aluminum, total	0.0354	OG < 0.1	0.0050 mg/L	2019-01-30	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2019-01-30	
Arsenic, total	< 0.00050	MAC = 0.01	0.00050 mg/L	2019-01-30	
Barium, total	0.0867	MAC = 1	0.0050 mg/L	2019-01-30	



TEST RESULTS

REPORTED TO PROJECT Stettler, Town of (Alberta)
Distribution System - Biannual Analysis

WORK ORDER REPORTED 9010672
2019-01-31 17:10

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
G.T. Hydraulic (9010672-01) Matrix: Water Sampled: 2019-01-09 10:15, Continued					
<i>Total Metals, Continued</i>					
Boron, total	0.0228	MAC = 5	0.0050 mg/L	2019-01-30	
Cadmium, total	< 0.010	MAC = 5	0.010 µg/L	2019-01-30	
Calcium, total	60.9	None Required	0.20 mg/L	2019-01-30	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2019-01-30	
Copper, total	0.0263	AO ≤ 1	0.00040 mg/L	2019-01-30	
Iron, total	< 0.010	AO ≤ 0.3	0.010 mg/L	2019-01-30	
Lead, total	0.00072	MAC = 0.01	0.00020 mg/L	2019-01-30	
Magnesium, total	20.1	None Required	0.010 mg/L	2019-01-30	
Manganese, total	0.00126	AO ≤ 0.05	0.00020 mg/L	2019-01-30	
Mercury, total	< 0.010	MAC = 1	0.010 µg/L	2019-01-23	
Selenium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2019-01-30	
Silicon, total	1.3	N/A	1.0 mg/L	2019-01-30	
Silver, total	< 0.050	N/A	0.050 µg/L	2019-01-30	
Sodium, total	17.0	AO ≤ 200	0.10 mg/L	2019-01-30	
Uranium, total	0.698	MAC = 20	0.020 µg/L	2019-01-30	
Zinc, total	0.0112	AO ≤ 5	0.0040 mg/L	2019-01-30	

Volatile Organic Compounds (VOC)

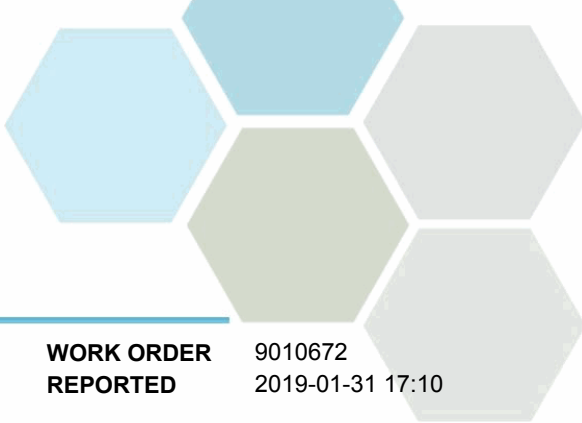
S03

Benzene	< 0.0005	MAC = 0.005	0.0005 mg/L	2019-01-17	
Bromodichloromethane	0.0054	N/A	0.0010 mg/L	2019-01-17	
Bromoform	0.0206	N/A	0.0010 mg/L	2019-01-17	
Carbon tetrachloride	< 0.0005	MAC = 0.002	0.0005 mg/L	2019-01-17	
Monochlorobenzene	< 0.0010	AO ≤ 0.03	0.0010 mg/L	2019-01-17	
Chloroform	0.0218	N/A	0.0010 mg/L	2019-01-17	
Dibromochloromethane	0.0055	N/A	0.0010 mg/L	2019-01-17	
1,2-Dichlorobenzene	< 0.0005	AO ≤ 0.003	0.0005 mg/L	2019-01-17	
1,4-Dichlorobenzene	< 0.0010	AO ≤ 0.001	0.0010 mg/L	2019-01-17	
1,2-Dichloroethane	< 0.0010	MAC = 0.005	0.0010 mg/L	2019-01-17	
1,1-Dichloroethylene	< 0.0010	MAC = 0.014	0.0010 mg/L	2019-01-17	
Dichloromethane	< 0.0030	MAC = 0.05	0.0030 mg/L	2019-01-17	
Ethylbenzene	< 0.0010	AO ≤ 0.0016	0.0010 mg/L	2019-01-17	
Methyl tert-butyl ether	< 0.0010	AO ≤ 0.015	0.0010 mg/L	2019-01-17	
Tetrachloroethylene	< 0.0010	MAC = 0.01	0.0010 mg/L	2019-01-17	
Toluene	< 0.0010	AO ≤ 0.024	0.0010 mg/L	2019-01-17	
Trichloroethylene	< 0.0010	MAC = 0.005	0.0010 mg/L	2019-01-17	
Vinyl chloride	< 0.0010	MAC = 0.002	0.0010 mg/L	2019-01-17	
Xylenes (total)	< 0.0020	AO ≤ 0.02	0.0020 mg/L	2019-01-17	

Town Shop (9010672-02) | Matrix: Water | Sampled: 2019-01-09 09:30

Calculated Parameters

Total Trihalomethanes	0.0324	MAC = 0.1	0.00400 mg/L	N/A	
-----------------------	--------	-----------	--------------	-----	--



TEST RESULTS

REPORTED TO PROJECT Stettler, Town of (Alberta)
Distribution System - Biannual Analysis

WORK ORDER REPORTED 9010672
2019-01-31 17:10

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
Town Shop (9010672-02) Matrix: Water Sampled: 2019-01-09 09:30, Continued					
<i>Volatile Organic Compounds (VOC)</i>					
Bromodichloromethane	0.0030	N/A	0.0010 mg/L	2019-01-17	
Bromoform	< 0.0010	N/A	0.0010 mg/L	2019-01-17	
Chloroform	0.0295	N/A	0.0010 mg/L	2019-01-17	
Dibromochloromethane	< 0.0010	N/A	0.0010 mg/L	2019-01-17	
Surrogate: Toluene-d8	91		70-130 %	2019-01-17	
Surrogate: 4-Bromofluorobenzene	87		70-130 %	2019-01-17	

Turtle Club (9010672-03) | Matrix: Water | Sampled: 2019-01-09 10:05

Calculated Parameters

Total Trihalomethanes	0.0321	MAC = 0.1	0.00400 mg/L	N/A	
-----------------------	--------	-----------	--------------	-----	--

Volatile Organic Compounds (VOC)

Bromodichloromethane	0.0028	N/A	0.0010 mg/L	2019-01-17	
Bromoform	< 0.0010	N/A	0.0010 mg/L	2019-01-17	
Chloroform	0.0294	N/A	0.0010 mg/L	2019-01-17	
Dibromochloromethane	< 0.0010	N/A	0.0010 mg/L	2019-01-17	
Surrogate: Toluene-d8	86		70-130 %	2019-01-17	
Surrogate: 4-Bromofluorobenzene	82		70-130 %	2019-01-17	

Sample Qualifiers:

- HT1 The sample was prepared and/or analyzed past the recommended holding time.
- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- S03 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.



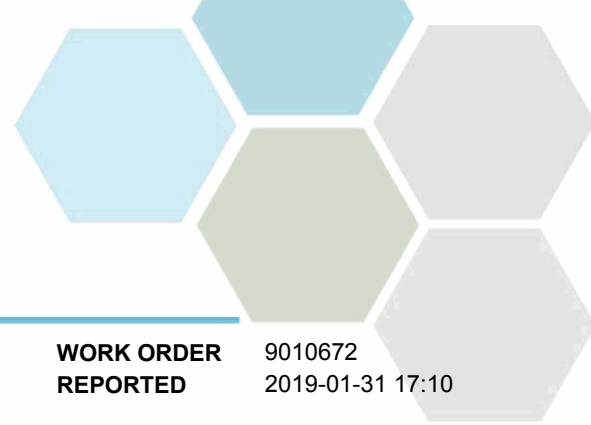
APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Stettler, Town of (Alberta)
Distribution System - Biannual Analysis

WORK ORDER REPORTED 9010672
2019-01-31 17:10

Analysis Description	Method Ref.	Technique	Location
Acid Herbicides in Water	EPA 8151A*	DCM Extraction with Diazomethane Derivatization, GC-MS	Richmond
Alkalinity in Water	SM 2320 B* (2011)	Titration with H ₂ SO ₄	Edmonton
Ammonia, Total in Water	SM 4500-NH ₃ D* (2011)	Ion Selective Electrode	Edmonton
Anions in Water	SM 4110 B (2011)	Ion Chromatography	Edmonton
Bromate in Water	SM 4110 B (2011)	Ion Chromatography	Sublet
Carbon, Total Organic in Water	SM 5310 B (2011)	Combustion, Infrared CO ₂ Detection	Kelowna
Chlorine, Free in Water	SM 4500-Cl G (2011)	Colorimetry (DPD)	Edmonton
Chlorine, Total in Water	SM 4500-Cl G (2011)	Colorimetry (DPD)	Edmonton
Colour, True in Water	SM 2120 C (2011)	Spectrophotometry (456 nm)	Edmonton
Conductivity in Water	SM 2510 B (2011)	Conductivity Meter	Edmonton
Cyanide, Free in Water	ASTM D7237-15a	Flow Injection with Gas Diffusion and Amperometry	Kelowna
Cyanobacterial Toxins in Water	EPA 546*	Adda Enzyme-Linked Immunosorbent Assay (ELISA)	Sublet
Dissolved Metals in Water	EPA 200.8 / EPA 6020B	0.45 µm Filtration / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond
Glyphosate in Water	EPA 547*	Direct Aqueous Injection HPLC with Post-Column Derivatization and Fluorescence Detection	Richmond
Hardness in Water	SM 2340 B (2011)	Calculation: 2.497 [diss Ca] + 4.118 [diss Mg]	N/A
Ion Balance in Water	SM 1030 E (2011)	Calculation: 100 x (([Cations]-[Anions])/([Cations]+[Anions]))	N/A
Mercury, total in Water	EPA 245.7*	BrCl ₂ Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
Nitilotriacetic Acid in Water	EPA 430.1	Manual Colorimetry (Zinc-Zincon)	Kelowna
Pesticides in Water	EPA 3510C* / EPA 8270D*	Liquid-Liquid DCM Extraction (B/N) / GC-MSD (SIM)	Richmond
pH in Water	SM 4500-H+ B (2011)	Electrometry	Edmonton
Phenols, Chlorinated in Water	EPA 3510C* / EPA 8270D	Liquid-Liquid DCM Extraction (Acidic) / GC-MSD (SIM)	Richmond
Polycyclic Aromatic Hydrocarbons in Water	EPA 3511* / EPA 8270D	Hexane MicroExtraction (Base/Neutral) / GC-MSD (SIM)	Richmond
Solids, Total Dissolved in Water	SM 1030 E (2011)	Calculation: 100 x (([Cations]-[Anions])/([Cations]+[Anions]))	N/A
Sulfide, Total in Water	SM 4500-S ₂ D* (2011)	Colorimetry (Methylene Blue)	Edmonton
Total Metals in Water	EPA 200.2* / EPA 6020B	HNO ₃ +HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond
Trihalomethanes in Water	EPA 5030B / EPA 8260D	Purge&Trap / GC-MSD (SIM)	Richmond
Turbidity in Water	SM 2130 B (2011)	Nephelometry	Edmonton
Volatile Organic Compounds in Water	EPA 5030B / EPA 8260D	Purge&Trap / GC-MSD (SIM)	Richmond

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



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Stettler, Town of (Alberta)
Distribution System - Biannual Analysis

WORK ORDER REPORTED 9010672
2019-01-31 17:10

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
AO	Aesthetic Objective
CU	Colour Units (referenced against a platinum cobalt standard)
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
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
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

Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, Feb 2017\)](#)

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 unless otherwise agreed to in writing. The quality control (QC) data is available upon request