



CERTIFICATE OF ANALYSIS

REPORTED TO	Stettler, Town of (Alberta) 5031 - 50 Street Stettler, AB T0C 2L0	WORK ORDER	22G0708
ATTENTION	Chris Saunders	RECEIVED / TEMP REPORTED	2022-07-07 09:00 / 13.6°C 2022-08-02 10:45
PO NUMBER		COC NUMBER	13947
PROJECT	Distribution System - Biannual Analysis		
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/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.

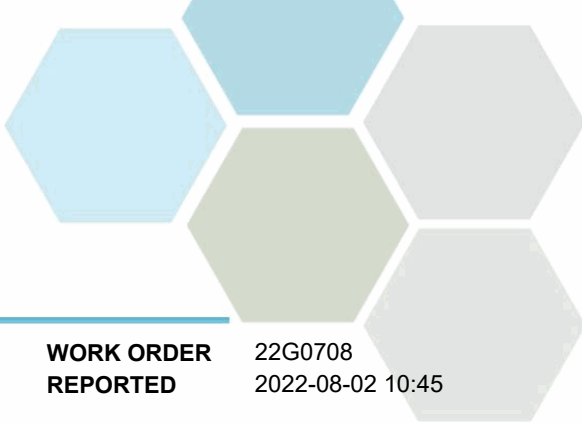
If you have any questions or concerns, please contact me at rpshyk@caro.ca

Authorized By:

Regan Pshyk
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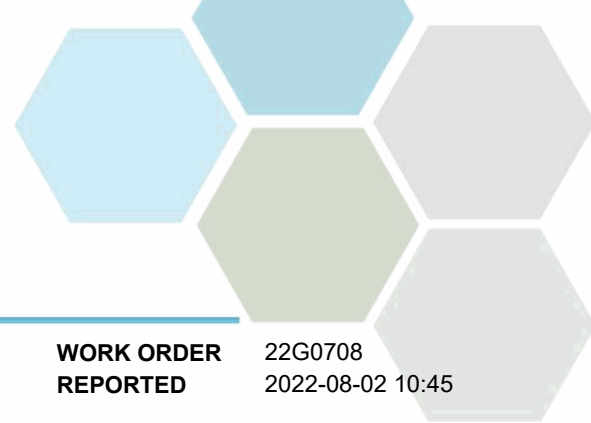
TEST RESULTS

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

WORK ORDER REPORTED 22G0708
2022-08-02 10:45

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
GT Hydraulics (22G0708-01) Matrix: Water Sampled: 2022-07-06 10:45					
Acid Herbicides					
2,4-D	< 0.10	MAC = 100	0.10 µg/L	2022-07-19	
MCPA	< 0.02	MAC = 100	0.02 µg/L	2022-07-19	
2,4,5-T	< 0.10	N/A	0.10 µg/L	2022-07-19	
Dicamba	< 0.10	MAC = 120	0.10 µg/L	2022-07-19	
Picloram	< 0.10	MAC = 190	0.10 µg/L	2022-07-19	
Dinoseb	< 0.10	N/A	0.10 µg/L	2022-07-19	
Anions					
Bromate	< 0.010	MAC = 0.01	0.010 mg/L	2022-07-29	
Chloride	10.9	AO ≤ 250	0.50 mg/L	2022-07-09	
Fluoride	0.34	MAC = 1.5	0.10 mg/L	2022-07-09	
Nitrate (as N)	< 0.050	MAC = 10	0.050 mg/L	2022-07-09	
Nitrite (as N)	< 0.050	MAC = 1	0.050 mg/L	2022-07-09	
Sulfate	64.1	AO ≤ 500	1.0 mg/L	2022-07-12	
Calculated Parameters					
Chloramines	0.470	MAC = 3	0.0400 mg/L	N/A	
Total Trihalomethanes	0.0669	MAC = 0.1	0.00400 mg/L	N/A	
Hardness, Total (as CaCO3)	168	None Required	0.541 mg/L	N/A	
Solids, Total Dissolved	238	AO ≤ 500	12.4 mg/L	N/A	
Chlorinated Phenols					
2,4-Dichlorophenol	< 0.00020	AO ≤ 0.0003	0.00020 mg/L	2022-07-12	
2,4,6-Trichlorophenol	< 0.00050	AO ≤ 0.002	0.00050 mg/L	2022-07-12	
2,3,4,6-Tetrachlorophenol	< 0.00050	AO ≤ 0.001	0.00050 mg/L	2022-07-12	
Pentachlorophenol	< 0.00050	AO ≤ 0.03	0.00050 mg/L	2022-07-12	
General Parameters					
Alkalinity, Total (as CaCO3)	129	N/A	2.0 mg/L	2022-07-12	
Bicarbonate (HCO3)	157	N/A	2.0 mg/L	2022-07-12	
Carbonate (CO3)	< 2.0	N/A	2.0 mg/L	2022-07-12	
Hydroxide (OH)	< 2.0	N/A	2.0 mg/L	2022-07-12	
Ammonia, Total (as N)	0.383	None Required	0.050 mg/L	2022-07-13	
Carbon, Total Organic	4.09	N/A	0.50 mg/L	2022-07-14	
Chlorine, Total	1.33	None Required	0.02 mg/L	2022-07-08	HT2
Chlorine, Free	0.86	N/A	0.02 mg/L	2022-07-08	HT2
Colour, True	< 5.0	AO ≤ 15	5.0 CU	2022-07-08	
Conductivity (EC)	460	N/A	2.0 µS/cm	2022-07-13	
Cyanide, Total	< 0.0020	MAC = 0.2	0.0020 mg/L	2022-07-15	
Nitritotriacetic Acid	< 0.20	MAC = 0.4	0.20 mg/L	2022-07-14	HT1
pH	7.23	7.0-10.5	0.10 pH units	2022-07-12	HT2
Sulfide, Total	< 0.020	AO ≤ 0.05	0.020 mg/L	2022-07-12	
Turbidity	0.41	OG < 1	0.10 NTU	2022-07-08	

Miscellaneous Herbicides



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GT Hydraulics (22G0708-01) | Matrix: Water | Sampled: 2022-07-06 10:45, Continued

Miscellaneous Herbicides, Continued

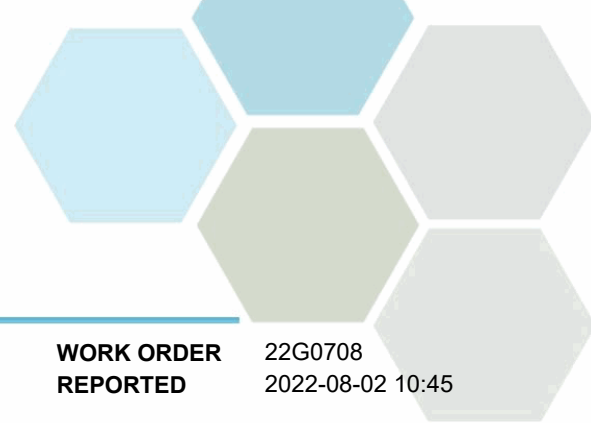
Glyphosate	< 0.050	MAC = 0.28	0.050	mg/L	2022-07-20	
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Pesticides, Herbicides, and Fungicides

Atrazine and metabolites	< 0.000100	MAC = 0.005	0.000100	mg/L	2022-07-14	
Azinphos-methyl	< 0.000200	MAC = 0.02	0.000200	mg/L	2022-07-14	
Bromoxynil	< 0.000200	MAC = 0.005	0.000200	mg/L	2022-07-14	
Chlorpyrifos	< 0.000010	MAC = 0.09	0.000010	mg/L	2022-07-14	
Cyanazine	< 0.000100	N/A	0.000100	mg/L	2022-07-14	
Diazinon	< 0.000020	MAC = 0.02	0.000020	mg/L	2022-07-14	
Diclofop-methyl	< 0.000100	MAC = 0.009	0.000100	mg/L	2022-07-14	
Dimethoate	< 0.000200	MAC = 0.02	0.000200	mg/L	2022-07-14	
Diuron	< 0.000200	MAC = 0.15	0.000200	mg/L	2022-07-14	
Malathion	< 0.000100	MAC = 0.19	0.000100	mg/L	2022-07-14	
Methoxychlor	< 0.000050	N/A	0.000050	mg/L	2022-07-14	
Metolachlor	< 0.000100	MAC = 0.05	0.000100	mg/L	2022-07-14	
Metribuzin	< 0.000200	MAC = 0.08	0.000200	mg/L	2022-07-14	
Phorate	< 0.000100	MAC = 0.002	0.000100	mg/L	2022-07-14	
Simazine	< 0.000200	MAC = 0.01	0.000200	mg/L	2022-07-14	
Terbufos	< 0.000100	MAC = 0.001	0.000100	mg/L	2022-07-14	
Triallate	< 0.000100	N/A	0.000100	mg/L	2022-07-14	
Trifluralin	< 0.000200	MAC = 0.045	0.000200	mg/L	2022-07-14	

Polycyclic Aromatic Hydrocarbons (PAH)

Acenaphthene	< 0.050	N/A	0.050	µg/L	2022-07-11	
Acenaphthylene	< 0.200	N/A	0.200	µg/L	2022-07-11	
Anthracene	< 0.010	N/A	0.010	µg/L	2022-07-11	
Benz(a)anthracene	< 0.010	N/A	0.010	µg/L	2022-07-11	
Benzo(a)pyrene	< 0.010	MAC = 0.04	0.010	µg/L	2022-07-11	
Benzo(b+j)fluoranthene	< 0.050	N/A	0.050	µg/L	2022-07-11	
Benzo(g,h,i)perylene	< 0.050	N/A	0.050	µg/L	2022-07-11	
Benzo(k)fluoranthene	< 0.050	N/A	0.050	µg/L	2022-07-11	
2-Chloronaphthalene	< 0.100	N/A	0.100	µg/L	2022-07-11	
Chrysene	< 0.050	N/A	0.050	µg/L	2022-07-11	
Dibenz(a,h)anthracene	< 0.010	N/A	0.010	µg/L	2022-07-11	
Fluoranthene	< 0.030	N/A	0.030	µg/L	2022-07-11	
Fluorene	< 0.050	N/A	0.050	µg/L	2022-07-11	
Indeno(1,2,3-cd)pyrene	< 0.050	N/A	0.050	µg/L	2022-07-11	
1-Methylnaphthalene	< 0.100	N/A	0.100	µg/L	2022-07-11	
2-Methylnaphthalene	< 0.100	N/A	0.100	µg/L	2022-07-11	
Naphthalene	< 0.200	N/A	0.200	µg/L	2022-07-11	
Phenanthrene	< 0.100	N/A	0.100	µg/L	2022-07-11	
Pyrene	< 0.020	N/A	0.020	µg/L	2022-07-11	
Quinoline	< 0.050	N/A	0.050	µg/L	2022-07-11	
Surrogate: Naphthalene-d8	103		50-140	%	2022-07-11	



TEST RESULTS

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Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
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GT Hydraulics (22G0708-01) | Matrix: Water | Sampled: 2022-07-06 10:45, Continued

Polycyclic Aromatic Hydrocarbons (PAH), Continued

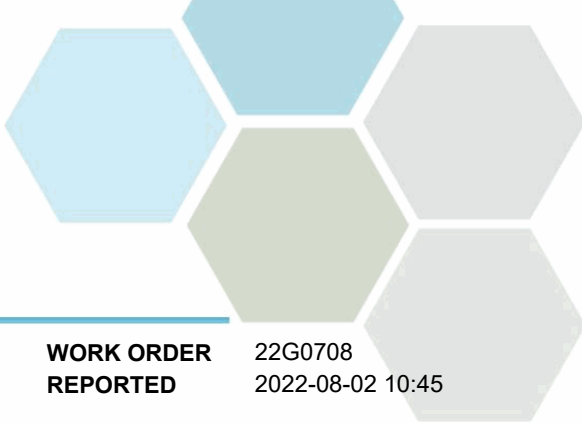
Surrogate: Perylene-d12	121		50-140	%	2022-07-11	
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Total Metals

Aluminum, total	0.0340	OG < 0.1	0.0050	mg/L	2022-07-10	
Antimony, total	< 0.00020	MAC = 0.006	0.00020	mg/L	2022-07-10	
Arsenic, total	0.00057	MAC = 0.01	0.00050	mg/L	2022-07-10	
Barium, total	0.0906	MAC = 2	0.0050	mg/L	2022-07-10	
Boron, total	< 0.0500	MAC = 5	0.0500	mg/L	2022-07-10	
Cadmium, total	< 0.010	MAC = 5	0.010	µg/L	2022-07-10	
Calcium, total	43.2	None Required	0.20	mg/L	2022-07-10	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2022-07-10	
Copper, total	0.0136	MAC = 2	0.00040	mg/L	2022-07-10	
Iron, total	< 0.010	AO ≤ 0.3	0.010	mg/L	2022-07-10	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2022-07-10	
Magnesium, total	14.7	None Required	0.010	mg/L	2022-07-10	
Manganese, total	0.0105	MAC = 0.12	0.00020	mg/L	2022-07-10	
Mercury, total	< 0.010	MAC = 1	0.010	µg/L	2022-07-12	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2022-07-10	
Silver, total	< 0.050	N/A	0.050	µg/L	2022-07-10	
Sodium, total	23.6	AO ≤ 200	0.10	mg/L	2022-07-10	
Uranium, total	0.152	MAC = 20	0.020	µg/L	2022-07-10	
Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2022-07-10	

Volatile Organic Compounds (VOC)

Benzene	< 0.5	MAC = 5	0.5	µg/L	2022-07-08	
Bromodichloromethane	3.2	N/A	1.0	µg/L	2022-07-08	
Bromoform	< 1.0	N/A	1.0	µg/L	2022-07-08	
Carbon tetrachloride	< 0.5	MAC = 2	0.5	µg/L	2022-07-08	
Chlorobenzene	< 1.0	AO ≤ 30	1.0	µg/L	2022-07-08	
Chloroethane	< 2.0	N/A	2.0	µg/L	2022-07-08	
Chloroform	63.7	N/A	1.0	µg/L	2022-07-08	
Dibromochloromethane	< 1.0	N/A	1.0	µg/L	2022-07-08	
1,2-Dibromoethane	< 0.3	N/A	0.3	µg/L	2022-07-08	
Dibromomethane	< 1.0	N/A	1.0	µg/L	2022-07-08	
1,2-Dichlorobenzene	< 0.5	AO ≤ 3	0.5	µg/L	2022-07-08	
1,3-Dichlorobenzene	< 1.0	N/A	1.0	µg/L	2022-07-08	
1,4-Dichlorobenzene	< 1.0	AO ≤ 1	1.0	µg/L	2022-07-08	
1,1-Dichloroethane	< 1.0	N/A	1.0	µg/L	2022-07-08	
1,2-Dichloroethane	< 1.0	MAC = 5	1.0	µg/L	2022-07-08	
1,1-Dichloroethylene	< 1.0	MAC = 14	1.0	µg/L	2022-07-08	
cis-1,2-Dichloroethylene	< 1.0	N/A	1.0	µg/L	2022-07-08	
trans-1,2-Dichloroethylene	< 1.0	N/A	1.0	µg/L	2022-07-08	
Dichloromethane	< 3.0	MAC = 50	3.0	µg/L	2022-07-08	
1,2-Dichloropropane	< 1.0	N/A	1.0	µg/L	2022-07-08	



TEST RESULTS

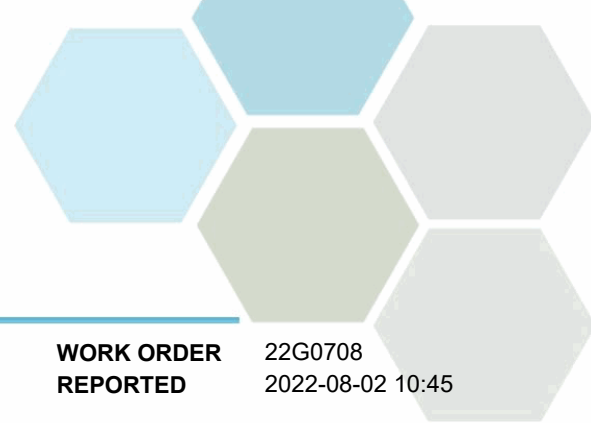
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Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
GT Hydraulics (22G0708-01) Matrix: Water Sampled: 2022-07-06 10:45, Continued					
<i>Volatile Organic Compounds (VOC), Continued</i>					
1,3-Dichloropropene (cis + trans)	< 1.0	N/A	1.0 µg/L	2022-07-08	
Ethylbenzene	< 1.0	AO ≤ 1.6	1.0 µg/L	2022-07-08	
Methyl tert-butyl ether	< 1.0	AO ≤ 15	1.0 µg/L	2022-07-08	
Styrene	< 1.0	N/A	1.0 µg/L	2022-07-08	
1,1,2,2-Tetrachloroethane	< 0.5	N/A	0.5 µg/L	2022-07-08	
Tetrachloroethylene	< 1.0	MAC = 10	1.0 µg/L	2022-07-08	
Toluene	< 1.0	MAC = 60	1.0 µg/L	2022-07-08	
1,1,1-Trichloroethane	< 1.0	N/A	1.0 µg/L	2022-07-08	
1,1,2-Trichloroethane	< 1.0	N/A	1.0 µg/L	2022-07-08	
Trichloroethylene	< 1.0	MAC = 5	1.0 µg/L	2022-07-08	
Trichlorofluoromethane	< 1.0	N/A	1.0 µg/L	2022-07-08	
Vinyl chloride	< 1.0	MAC = 2	1.0 µg/L	2022-07-08	
Xylenes (total)	< 2.0	AO ≤ 20	2.0 µg/L	2022-07-08	
Surrogate: Toluene-d8	94		70-130 %	2022-07-08	
Surrogate: 4-Bromofluorobenzene	83		70-130 %	2022-07-08	

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.



APPENDIX 1: SUPPORTING INFORMATION

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

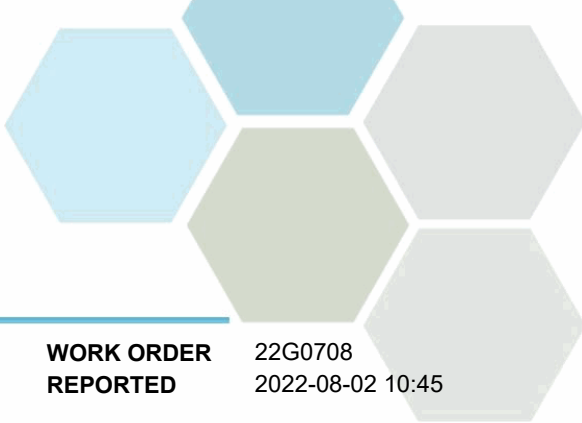
WORK ORDER REPORTED 22G0708
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Analysis Description	Method Ref.	Technique	Accredited	Location
Acid Herbicides in Water in Water	In-House	N/A	✓	Richmond
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	✓	Edmonton
Ammonia, Total in Water	SM 4500-NH3 D* (2017)	Ion Selective Electrode	✓	Edmonton
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Edmonton
Bromate in Water	SM 4110 B (2017)	Ion Chromatography	✓	Sublet
Carbon, Total Organic in Water	SM 5310 B (2017)	Combustion, Infrared CO2 Detection	✓	Kelowna
Chlorine, Free in Water	SM 4500-Cl G (2017)	Colorimetry (DPD)	✓	Edmonton
Chlorine, Total in Water	SM 4500-Cl G (2017)	Colorimetry (DPD)	✓	Edmonton
Colour, True in Water	SM 2120 C (2017)	Spectrophotometry (456 nm)	✓	Edmonton
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	✓	Edmonton
Cyanide, SAD in Water	ASTM D7511-12	Flow Injection with In-Line UV Digestion and Amperometry	✓	Kelowna
Glyphosate in Water	EPA 547*	Direct Aqueous Injection HPLC with Post-Column Derivatization and Fluorescence Detection	✓	Richmond
Hardness in Water	SM 2340 B (2017)	Calculation: 2.497 [diss Ca] + 4.118 [diss Mg]	✓	N/A
Mercury, total in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	✓	Richmond
Nitrilotriacetic 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 (2017)	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)		Edmonton
Solids, Total Dissolved in Water	SM 1030 E (2017)	SM 1030 E (2011)	✓	N/A
Sulfide, Total in Water	SM 4500-S2 D* (2017)	Colorimetry (Methylene Blue)	✓	Edmonton
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Turbidity in Water	SM 2130 B (2017)	Nephelometry	✓	Edmonton
Volatile Organic Compounds in Water	EPA 5030B / EPA 8260D	Purge&Trap / GC-MSD (SIM)		Edmonton

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
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



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT	Stettler, Town of (Alberta) Distribution System - Biannual Analysis	WORK ORDER REPORTED	22G0708 2022-08-02 10:45
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		

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: rpshyk@caro.ca

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