

CERTIFICATE OF ANALYSIS

REPORTED TO	Stettler, Town of (Alberta) 5031 - 50 Street Stettler, AB T0C 2L0	WORK ORDER	23G0544
ATTENTION	Chris Saunders	RECEIVED / TEMP REPORTED	2023-07-06 08:30 / 13.5°C 2023-07-17 10:28
PO NUMBER		COC NUMBER	11701
PROJECT	Stettler WTP - AEP Upload		
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.

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 rpschyk@caro.ca

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TEST RESULTS

REPORTED TO PROJECT Stettler, Town of (Alberta)
Stettler WTP - AEP Upload

WORK ORDER REPORTED 23G0544
2023-07-17 10:28

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
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GT Hydraulic (23G0544-01) | Matrix: Water | Sampled: 2023-07-05 10:48

Calculated Parameters

Total Trihalomethanes	0.0622	MAC = 0.1	0.00400	mg/L		N/A
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Haloacetic Acids

Monochloroacetic Acid	< 0.0020	N/A	0.0020	mg/L		2023-07-16
Monobromoacetic Acid	< 0.0020	N/A	0.0020	mg/L		2023-07-16
Dichloroacetic Acid	0.0354	N/A	0.0020	mg/L		2023-07-16
Trichloroacetic Acid	0.0206	N/A	0.0020	mg/L		2023-07-16
Dibromoacetic Acid	< 0.0020	N/A	0.0020	mg/L		2023-07-16
Total Haloacetic Acids (HAA5)	0.0560	MAC = 0.08	0.00200	mg/L		N/A
Surrogate: 2-Bromopropionic Acid	101		70-130	%		2023-07-16

Volatile Organic Compounds (VOC)

Bromodichloromethane	0.0029	N/A	0.0010	mg/L		2023-07-12
Bromoform	< 0.0010	N/A	0.0010	mg/L		2023-07-12
Chloroform	0.0593	N/A	0.0010	mg/L		2023-07-12
Dibromochloromethane	< 0.0010	N/A	0.0010	mg/L		2023-07-12
Surrogate: Toluene-d8	104		70-130	%		2023-07-12
Surrogate: 4-Bromofluorobenzene	113		70-130	%		2023-07-12

Town Shop (23G0544-02) | Matrix: Water | Sampled: 2023-07-05 10:26

Calculated Parameters

Total Trihalomethanes	0.103	MAC = 0.1	0.00400	mg/L		N/A
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Haloacetic Acids

Monochloroacetic Acid	< 0.0020	N/A	0.0020	mg/L		2023-07-16
Monobromoacetic Acid	< 0.0020	N/A	0.0020	mg/L		2023-07-16
Dichloroacetic Acid	0.0412	N/A	0.0020	mg/L		2023-07-16
Trichloroacetic Acid	0.0215	N/A	0.0020	mg/L		2023-07-16
Dibromoacetic Acid	< 0.0020	N/A	0.0020	mg/L		2023-07-16
Total Haloacetic Acids (HAA5)	0.0627	MAC = 0.08	0.00200	mg/L		N/A
Surrogate: 2-Bromopropionic Acid	106		70-130	%		2023-07-16

Volatile Organic Compounds (VOC)

Bromodichloromethane	0.0037	N/A	0.0010	mg/L		2023-07-12
Bromoform	< 0.0010	N/A	0.0010	mg/L		2023-07-12
Chloroform	0.0995	N/A	0.0010	mg/L		2023-07-12
Dibromochloromethane	< 0.0010	N/A	0.0010	mg/L		2023-07-12
Surrogate: Toluene-d8	110		70-130	%		2023-07-12
Surrogate: 4-Bromofluorobenzene	117		70-130	%		2023-07-12

Turtle Club (23G0544-03) | Matrix: Water | Sampled: 2023-07-05 10:42

Calculated Parameters



TEST RESULTS

REPORTED TO PROJECT Stettler, Town of (Alberta)
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WORK ORDER REPORTED 23G0544
2023-07-17 10:28

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
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Turtle Club (23G0544-03) | Matrix: Water | Sampled: 2023-07-05 10:42, Continued

Calculated Parameters, Continued

Total Trihalomethanes	0.0723	MAC = 0.1	0.00400	mg/L	N/A	
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Haloacetic Acids

Monochloroacetic Acid	< 0.0020	N/A	0.0020	mg/L	2023-07-16	
Monobromoacetic Acid	< 0.0020	N/A	0.0020	mg/L	2023-07-16	
Dichloroacetic Acid	0.0384	N/A	0.0020	mg/L	2023-07-16	
Trichloroacetic Acid	0.0217	N/A	0.0020	mg/L	2023-07-16	
Dibromoacetic Acid	< 0.0020	N/A	0.0020	mg/L	2023-07-16	
Total Haloacetic Acids (HAA5)	0.0601	MAC = 0.08	0.00200	mg/L	N/A	
Surrogate: 2-Bromopropionic Acid	107		70-130	%	2023-07-16	

Volatile Organic Compounds (VOC)

Bromodichloromethane	0.0031	N/A	0.0010	mg/L	2023-07-12	
Bromoform	< 0.0010	N/A	0.0010	mg/L	2023-07-12	
Chloroform	0.0692	N/A	0.0010	mg/L	2023-07-12	
Dibromochloromethane	< 0.0010	N/A	0.0010	mg/L	2023-07-12	
Surrogate: Toluene-d8	106		70-130	%	2023-07-12	
Surrogate: 4-Bromofluorobenzene	113		70-130	%	2023-07-12	



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Stettler, Town of (Alberta)
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Analysis Description	Method Ref.	Technique	Accredited	Location
Haloacetic Acids in Water	EPA 552.3*	Liquid-Liquid Microextraction, Derivatization and GC-ECD	✓	Richmond
Trihalomethanes 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
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
EPA	United States Environmental Protection Agency Test Methods

Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, September 2022\)](#)

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 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: rpschyk@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 Stettler, Town of (Alberta)
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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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Haloacetic Acids, Batch B3G1476

Blank (B3G1476-BLK1)

Prepared: 2023-07-15, Analyzed: 2023-07-15

Monochloroacetic Acid	< 0.0020	0.0020 mg/L							
Monobromoacetic Acid	< 0.0020	0.0020 mg/L							
Dichloroacetic Acid	< 0.0020	0.0020 mg/L							
Trichloroacetic Acid	< 0.0020	0.0020 mg/L							
Dibromoacetic Acid	< 0.0020	0.0020 mg/L							
Surrogate: 2-Bromopropionic Acid	0.0120	mg/L	0.0116		103	70-130			

LCS (B3G1476-BS1)

Prepared: 2023-07-15, Analyzed: 2023-07-15

Monochloroacetic Acid	0.0539	0.0020 mg/L	0.0564		96	75-117			
Monobromoacetic Acid	0.0357	0.0020 mg/L	0.0374		96	83-113			
Dichloroacetic Acid	0.0542	0.0020 mg/L	0.0558		97	78-112			
Trichloroacetic Acid	0.0180	0.0020 mg/L	0.0186		96	81-110			
Dibromoacetic Acid	0.0173	0.0020 mg/L	0.0187		92	89-112			
Surrogate: 2-Bromopropionic Acid	0.0115	mg/L	0.0116		99	70-130			

LCS Dup (B3G1476-BSD1)

Prepared: 2023-07-15, Analyzed: 2023-07-15

Monochloroacetic Acid	0.0588	0.0020 mg/L	0.0564		104	75-117	9	30	
Monobromoacetic Acid	0.0393	0.0020 mg/L	0.0374		105	83-113	10	30	
Dichloroacetic Acid	0.0580	0.0020 mg/L	0.0558		104	78-112	7	30	
Trichloroacetic Acid	0.0195	0.0020 mg/L	0.0186		105	81-110	8	30	
Dibromoacetic Acid	0.0203	0.0020 mg/L	0.0187		109	89-112	16	30	
Surrogate: 2-Bromopropionic Acid	0.0118	mg/L	0.0116		101	70-130			

Volatile Organic Compounds (VOC), Batch B3G0852

Blank (B3G0852-BLK1)

Prepared: 2023-07-10, Analyzed: 2023-07-11

Bromodichloromethane	< 0.0010	0.0010 mg/L							
Bromoform	< 0.0010	0.0010 mg/L							
Chloroform	< 0.0010	0.0010 mg/L							
Dibromochloromethane	< 0.0010	0.0010 mg/L							
Surrogate: Toluene-d8	0.0218	mg/L	0.0200		109	70-130			
Surrogate: 4-Bromofluorobenzene	0.0227	mg/L	0.0200		113	70-130			

LCS (B3G0852-BS1)

Prepared: 2023-07-10, Analyzed: 2023-07-11

Bromodichloromethane	0.0211	0.0010 mg/L	0.0201		105	70-130			
Bromoform	0.0229	0.0010 mg/L	0.0201		114	70-130			



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2023-07-17 10:28

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Volatile Organic Compounds (VOC), Batch B3G0852, Continued									
LCS (B3G0852-BS1), Continued					Prepared: 2023-07-10, Analyzed: 2023-07-11				
Chloroform	0.0218	0.0010 mg/L	0.0201		108	70-130			
Dibromochloromethane	0.0211	0.0010 mg/L	0.0201		105	70-130			
Surrogate: Toluene-d8	0.0176	mg/L	0.0200		88	70-130			
Surrogate: 4-Bromofluorobenzene	0.0190	mg/L	0.0200		95	70-130			