



CERTIFICATE OF ANALYSIS

REPORTED TO Parksville, City of
P O Box 1390, 100 Jensen Avenue East
Parksville, BC V9P 2H3

ATTENTION Barbara Silenieks

PO NUMBER 003618

PROJECT 361341 - THM Quarterly (Island Health)

PROJECT INFO

WORK ORDER 9082544

RECEIVED / TEMP 2019-08-27 08:45 / 16°C
REPORTED 2019-09-06 11:22

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.

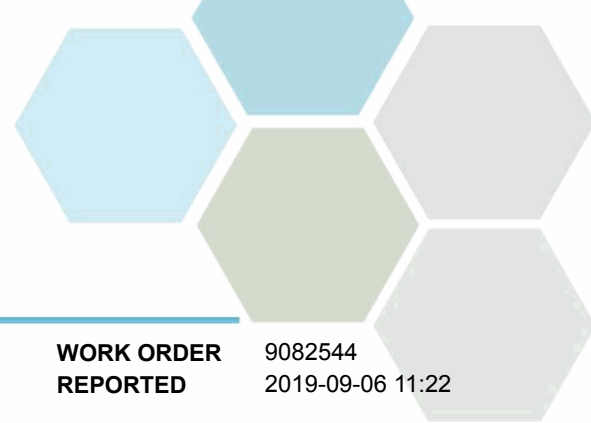
If you have any questions or concerns, please contact me at bshaw@caro.ca

Authorized By:

Bryan Shaw, Ph.D., P.Chem.
Client Service Coordinator

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 Parksville, City of
361341 - THM Quarterly (Island Health)

WORK ORDER REPORTED 9082544
2019-09-06 11:22

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Community Park (9082544-01) Matrix: Water Sampled: 2019-08-26 08:20						
<i>Calculated Parameters</i>						
Total Trihalomethanes	0.0290	N/A	0.00400	mg/L	N/A	
<i>Volatile Organic Compounds (VOC)</i>						
Bromodichloromethane	0.0062	N/A	0.0010	mg/L	2019-09-05	
Bromoform	< 0.0010	N/A	0.0010	mg/L	2019-09-05	
Chloroform	0.0214	N/A	0.0010	mg/L	2019-09-05	
Dibromochloromethane	0.0014	N/A	0.0010	mg/L	2019-09-05	
Surrogate: Toluene-d8	85		70-130	%	2019-09-05	
Surrogate: 4-Bromofluorobenzene	114		70-130	%	2019-09-05	

Temple (9082544-02) | Matrix: Water | Sampled: 2019-08-26 08:30

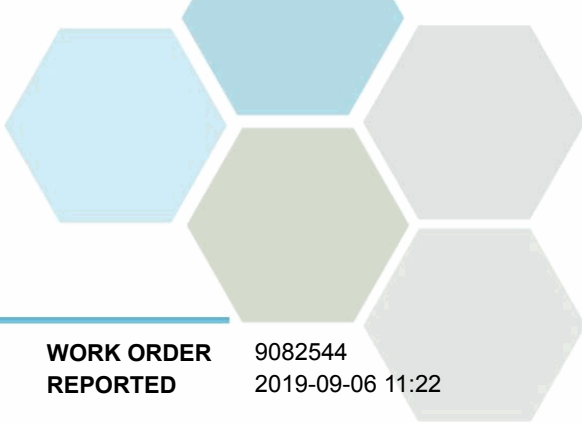
<i>Calculated Parameters</i>						
Total Trihalomethanes	0.0134	N/A	0.00400	mg/L	N/A	
<i>Volatile Organic Compounds (VOC)</i>						
Bromodichloromethane	0.0033	N/A	0.0010	mg/L	2019-09-05	
Bromoform	0.0016	N/A	0.0010	mg/L	2019-09-05	
Chloroform	0.0053	N/A	0.0010	mg/L	2019-09-05	
Dibromochloromethane	0.0032	N/A	0.0010	mg/L	2019-09-05	
Surrogate: Toluene-d8	87		70-130	%	2019-09-05	
Surrogate: 4-Bromofluorobenzene	117		70-130	%	2019-09-05	

Ermineskin (9082544-03) | Matrix: Water | Sampled: 2019-08-26 08:40

<i>Calculated Parameters</i>						
Total Trihalomethanes	0.00463	N/A	0.00400	mg/L	N/A	
<i>Volatile Organic Compounds (VOC)</i>						
Bromodichloromethane	0.0011	N/A	0.0010	mg/L	2019-09-05	
Bromoform	0.0015	N/A	0.0010	mg/L	2019-09-05	
Chloroform	< 0.0010	N/A	0.0010	mg/L	2019-09-05	
Dibromochloromethane	0.0020	N/A	0.0010	mg/L	2019-09-05	
Surrogate: Toluene-d8	82		70-130	%	2019-09-05	
Surrogate: 4-Bromofluorobenzene	111		70-130	%	2019-09-05	

Public Works (9082544-04) | Matrix: Water | Sampled: 2019-08-26 08:50

<i>Calculated Parameters</i>						
Total Trihalomethanes	0.0311	N/A	0.00400	mg/L	N/A	
<i>Volatile Organic Compounds (VOC)</i>						
Bromodichloromethane	0.0068	N/A	0.0010	mg/L	2019-09-05	

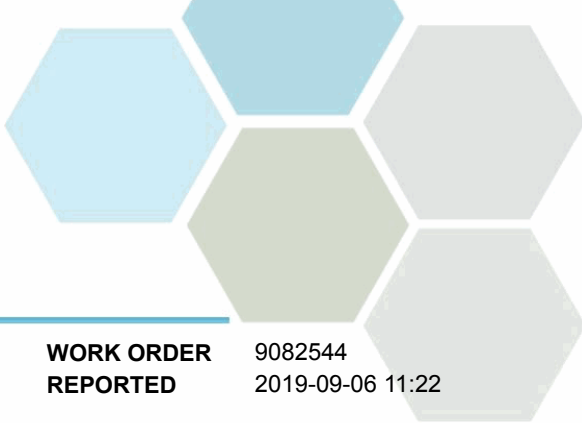


TEST RESULTS

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2019-09-06 11:22

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Public Works (9082544-04) Matrix: Water Sampled: 2019-08-26 08:50, Continued						
<i>Volatile Organic Compounds (VOC), Continued</i>						
Bromoform	< 0.0010	N/A	0.0010	mg/L	2019-09-05	
Chloroform	0.0228	N/A	0.0010	mg/L	2019-09-05	
Dibromochloromethane	0.0015	N/A	0.0010	mg/L	2019-09-05	
<i>Surrogate: Toluene-d8</i>	88		70-130	%	2019-09-05	
<i>Surrogate: 4-Bromofluorobenzene</i>	117		70-130	%	2019-09-05	



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Parksville, City of
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Analysis Description	Method Ref.	Technique	Location
Trihalomethanes in Water	EPA 5030B / EPA 8260D	Purge&Trap / GC-MSD (SIM)	Richmond

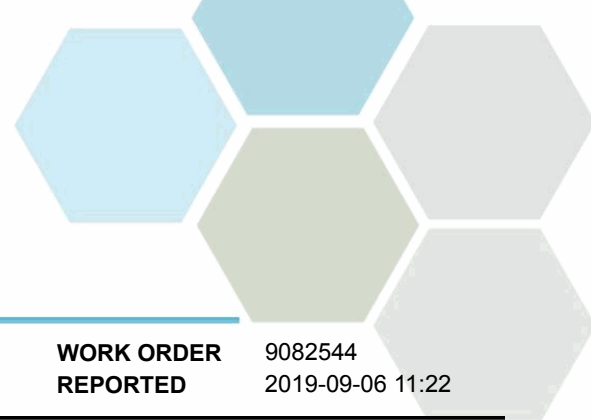
Glossary of Terms:

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
mg/L	Milligrams per litre
EPA	United States Environmental Protection Agency Test Methods

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.

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: bshaw@caro.ca



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 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
Volatile Organic Compounds (VOC), Batch B910242									
Blank (B910242-BLK1)			Prepared: 2019-09-05, Analyzed: 2019-09-05						
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	0.0238	mg/L	0.0262		91	70-130			
Surrogate: 4-Bromofluorobenzene	0.0299	mg/L	0.0250		120	70-130			
LCS (B910242-BS1)			Prepared: 2019-09-05, Analyzed: 2019-09-05						
Bromodichloromethane	0.0194	0.0010 mg/L	0.0201		96	70-130			
Bromoform	0.0224	0.0010 mg/L	0.0201		112	70-130			
Chloroform	0.0210	0.0010 mg/L	0.0201		104	70-130			
Dibromochloromethane	0.0203	0.0010 mg/L	0.0200		101	70-130			
Surrogate: Toluene-d8	0.0229	mg/L	0.0262		87	70-130			
Surrogate: 4-Bromofluorobenzene	0.0270	mg/L	0.0250		108	70-130			
Duplicate (B910242-DUP1)			Source: 9082544-02		Prepared: 2019-09-05, Analyzed: 2019-09-05				
Bromodichloromethane	0.0035	0.0010 mg/L		0.0033					23
Bromoform	0.0017	0.0010 mg/L		0.0016					23
Chloroform	0.0056	0.0010 mg/L		0.0053			5		22
Dibromochloromethane	0.0034	0.0010 mg/L		0.0032					28
Surrogate: Toluene-d8	0.0239	mg/L	0.0262		91	70-130			
Surrogate: 4-Bromofluorobenzene	0.0306	mg/L	0.0250		122	70-130			
Matrix Spike (B910242-MS1)			Source: 9082544-02		Prepared: 2019-09-05, Analyzed: 2019-09-05				
Bromodichloromethane	0.0281	0.0010 mg/L	0.0201	0.0033	123	70-130			
Bromoform	0.0287	0.0010 mg/L	0.0201	0.0016	135	70-130			SPK1
Chloroform	0.0286	0.0010 mg/L	0.0201	0.0053	116	70-130			
Dibromochloromethane	0.0304	0.0010 mg/L	0.0200	0.0032	136	70-130			SPK1
Surrogate: Toluene-d8	0.0248	mg/L	0.0262		95	70-130			
Surrogate: 4-Bromofluorobenzene	0.0300	mg/L	0.0250		120	70-130			



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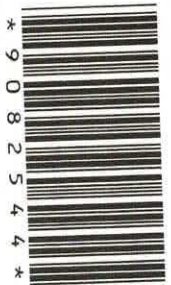
QC Qualifiers:

SPK1 The recovery of this analyte was outside of established control limits. The data was accepted based on performance of other batch QC.



ANALYTICAL SERVICES
 Caring About Results, Obviously.
 #102-3677 Highway 97N, Kelowna, BC V1X 5C3
 17225 109 Avenue NW, Edmonton, AB T5S 1H7
 #108-4475 Wayburne Drive, Burnaby, BC V5G 4X4

REPORT TO: City of Parksville
 COMPANY: City of Parksville
 ADDRESS: _____



INVOICE TO: _____
 * 9 0 8 2 5 4 4 *

CONTACT: _____
 TEL/FAX: _____
 DELIVERY METHOD: EMAIL ONLINE OTHER*
 DATA FORMAT: EXCEL WATERTRAX Esdat
 EQUIS BC EMS OTHER*
 EMAIL 1: bsilenerkse@parksville.ca
 EMAIL 2: _____
 EMAIL 3: _____

DELIVERY METHOD: EMAIL ONLINE OTHER*
 EMAIL 1: _____
 EMAIL 2: _____
 EMAIL 3: _____
 PO #: _____

SAMPLED BY: Barb Silenerkse

** 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	DATE YYYY-MM-DD	TIME HH:MM	COMMENTS:		
					CHLORINATED	FILTERED	PRESERVED
Community Park	DRINKING WATER		2019-08-26	8:20			
Temple	OTHER WATER		2019-08-26	8:30			
Ermineskin	SOIL		2019-08-26	8:40			
Public Works	OTHER		2019-08-26	8:50			

SHIPPING INSTRUCTIONS: Return Cooler(s)
 Supplies Needed: 30 Days (default)
 60 Days 90 Days
 Other (surcharges will apply): _____

* OTHER INSTRUCTIONS: PO 003618
THMS
 If you would like to talk to a real live Scientist about your project requirements, please check here:

RELINQUISHED BY: Barb Silenerkse DATE: Aug 26 19 RECEIVED BY: [Signature] DATE: 08/27/19
 TURNAROUND TIME REQUESTED: 1 Rush: 1 Day* 2 Day* 3 Day*
 Routine: (5-7 Days)
 *Contact Lab To Confirm. Surcharge May Apply
 PROJECT NUMBER / INFO: _____
 REGULATORY APPLICATION: Canadian Drinking Water Quality BC WQG BC HW
 BC CSR Soil: WL AL PL RL-LD RL-HD CLT
 BC CSR Water: AW IW LW DW
 CCME: _____
 Other: _____
 ANALYSES REQUESTED:
 A: Biohazard D: Asbestos G: Strong Odour
 B: Cyanide E: Heavy Metals H: High Contamination
 C: PCBs F: Flammable I: Other (please specify) _____

SAMPLING:		COMMENTS:		ANALYSES REQUESTED:	
DATE	TIME	CHLORINATED	FILTERED	PRESERVED	(eg. flow/volume media ID/notes)
2019-08-26	8:20	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2019-08-26	8:30	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2019-08-26	8:40	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2019-08-26	8:50	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

SAMPLE RECEIPT CONDITION:
 COOLER 1 (°C): 15.6 ICE: Y N
 COOLER 2 (°C): _____ ICE: Y N
 COOLER 3 (°C): _____ ICE: Y N
 CUSTODY SEALS INTACT: NA Y N