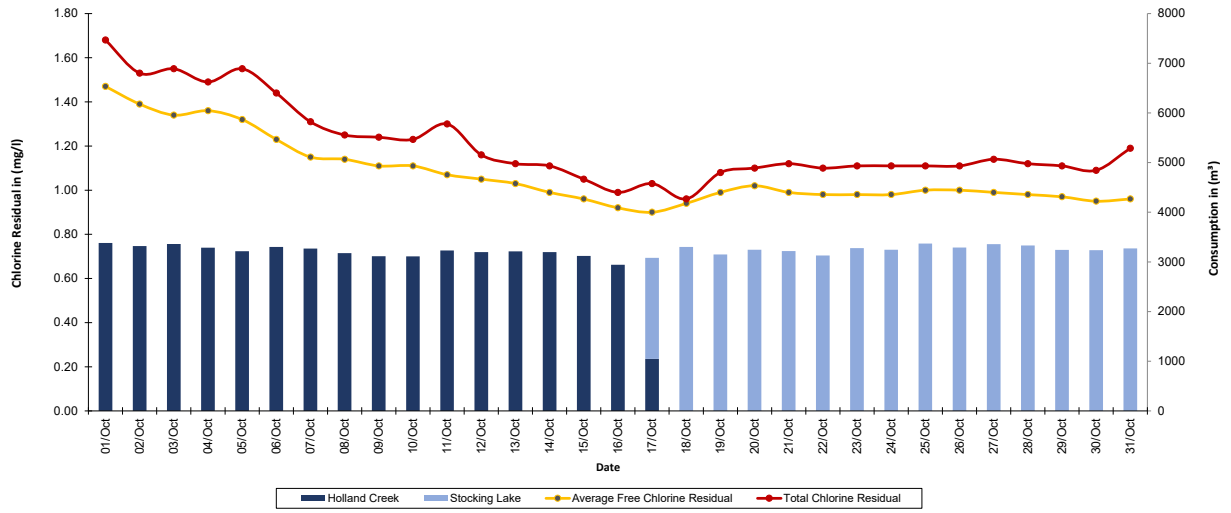
Town of Ladysmith - Arbutus Water treatment Plant

October 2024 - Monthly Report

Date	Daily Flow			Chlorine Residual				CT*	External Lab Testing					
	Stocking Lake	Holland Creek	Combined Flow	Free Min	Free Max	Free Avg	Total		HPC	E.coli	Total Coliforms	Aluminum	THM	HAA
	m³	m³	m³	mg/l	mg/l	mg/l	mg/l	Minutes·mg/l	CFU	MPN	MPN	mg/l	mg/l	mg/l
01-Oct	0	3382	3382	1.46	1.55	1.47	1.68	173	< 1	< 1	< 1	0.0335	50.3000	43.6000
02-Oct	0	3320	3320	1.39	1.47	1.39	1.53	91						
03-Oct	0	3362	3362	1.34	1.41	1.34	1.55	65						
04-Oct	0	3287	3287	1.28	4.37	1.36	1.49	325						
05-Oct	0	3215	3215	1.32	4.38	1.32	1.55	293						
06-Oct	0	3301	3301	1.22	4.32	1.23	1.44	175						
07-Oct	0	3268	3268	1.14	1.23	1.15	1.31	264						
08-Oct	0	3177	3177	1.11	1.16	1.14	1.25	86	< 1	< 1	< 1			
09-Oct	0	3116	3116	1.11	1.17	1.11	1.24	144						
10-Oct	0	3113	3113	1.01	1.13	1.11	1.23	140						
11-Oct	0	3230	3230	1.07	1.10	1.07	1.30	209						
12-Oct	0	3199	3199	1.03	1.07	1.05	1.16	298						
13-Oct	0	3212	3212	1.02	1.04	1.03	1.12	290						
14-Oct	0	3199	3199	0.98	1.03	0.99	1.11	204						
15-Oct	0	3121	3121	0.95	0.99	0.96	1.05	186	< 1	< 1	< 1			
16-Oct	0	2943	2943	0.90	0.96	0.92	0.99	193						
17-Oct	2033	1048	3081	0.89	0.92	0.90	1.03	142						
18-Oct	3300	0	3300	0.88	0.95	0.94	0.96	193						
19-Oct	3149	0	3149	0.94	1.00	0.99	1.08	278						
20-Oct	3246	0	3246	0.98	1.03	1.02	1.10	305						
21-Oct	3217	0	3217	0.99	1.03	0.99	1.12	303						
22-Oct	3129	0	3129	0.96	1.00	0.98	1.10	241	< 1	< 1	< 1	0.0127	23.5000	12.9000
23-Oct	3277	0	3277	0.96	0.99	0.98	1.11	220						
24-Oct	3246	0	3246	0.95	0.99	0.98	1.11	206						
25-Oct	3369	0	3369	0.97	1.01	1.00	1.11	217						
26-Oct	3290	0	3290	0.98	1.01	1.00	1.11	217						
27-Oct	3356	0	3356	0.97	1.00	0.99	1.14	269						
28-Oct	3330	0	3330	0.95	1.00	0.98	1.12	259						
29-Oct	3243	0	3243	0.96	1.00	0.97	1.11	254	< 1	< 1	< 1			
30-Oct	3235	0	3235	0.93	0.98	0.95	1.09	223						
31-Oct	3272	0	3272	0.95	0.97	0.96	1.19	239						
Total	47692	52497	100189											
Average	1538	1693	3232	1.05	1.40	1.07	1.21	216	< 1	< 1	< 1	0.0231	36.9000	28.25000

*CT - Recorded as the minimum value at the highest daily flow ** Manual Residual were not taken

Arbutus WTP Consumption and Chlorine Residual



VEOLIA

InSight

Town of Ladysmith Arbutus DWTP

Monthly LRV and Turbidity Report

10/01/2024 - 11/01/2024

LRV Monthly Average

Asset	Parameter	Health	Avg	Std. Dev	Points	LL	L	%In	% between L and LL	% < LL	Unit
UF 1	LRV		5.0	0.0	27	4.25	4.5	100 %	0 %	0 %	#
UF 2	LRV		5.0	0.0	27	4.25	4.5	100 %	0 %	0 %	#
UF 3	LRV		5.0	0.0	27	4.25	4.5	100 %	0 %	0 %	#

LRV Daily Values

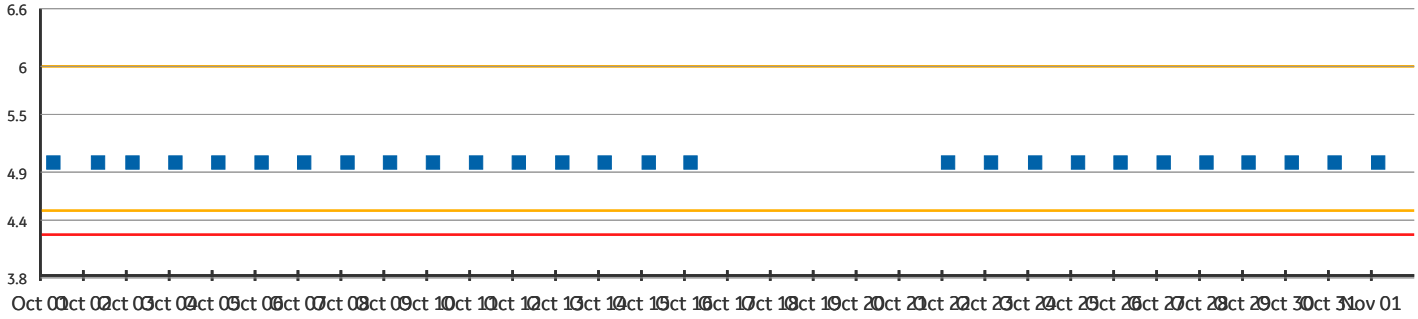
Asset	Parameter	Oct 01	Oct 02	Oct 03	Oct 04	Oct 05	Oct 06	Oct 07	Oct 08	Oct 09	Oct 10	Oct 11	Oct 12
UF 1	LRV	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
UF 2	LRV	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
UF 3	LRV	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0

Asset	Oct 13	Oct 14	Oct 15	Oct 16	Oct 17	Oct 18	Oct 19	Oct 20	Oct 21	Oct 22	Oct 23	Oct 24	Oct 25	Oct 26	Oct 27	Oct 28
UF 1	5.0	5.0	5.0	5.0	--	--	--	--	--	5.0	5.0	5.0	5.0	5.0	5.0	5.0
UF 2	5.0	5.0	5.0	5.0	--	--	--	--	--	5.0	5.0	5.0	5.0	5.0	5.0	5.0
UF 3	5.0	5.0	5.0	5.0	--	--	--	--	--	5.0	5.0	5.0	5.0	5.0	5.0	5.0

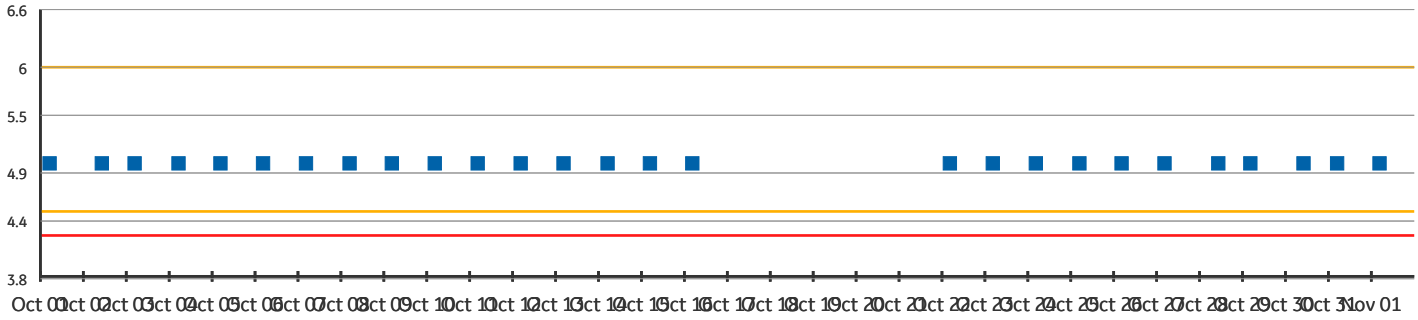
Asset	Oct 29	Oct 30	Oct 31	Nov 01
UF 1	5.0	5.0	5.0	5.0
UF 2	5.0	5.0	5.0	5.0
UF 3	5.0	5.0	5.0	5.0

LRV Raw Data

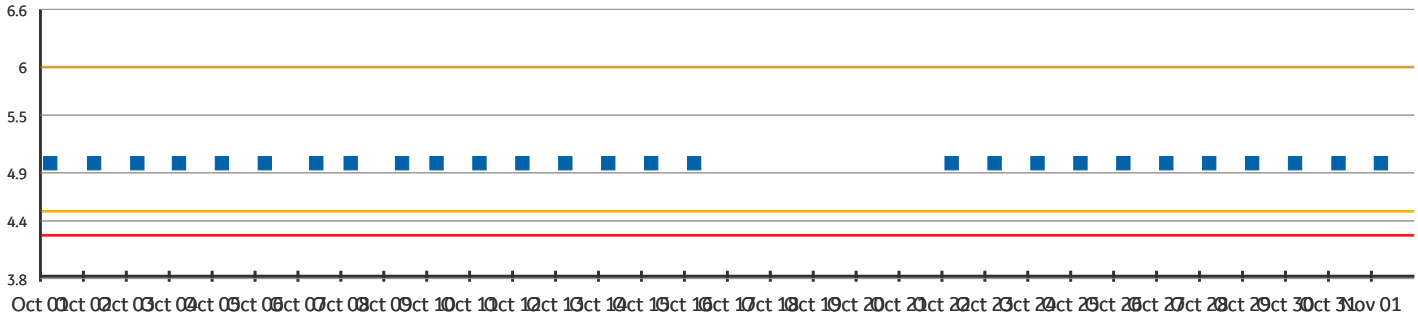
UF 1 - LRV (#)



UF 2 - LRV (#)



UF 3 - LRV (#)



Turbidity Monthly Average

Asset	Parameter	Health	Avg	Std. Dev	Points	H	HH	%In	% between H and HH	% > HH	Unit
UF 1	PermeateTurbidity		0.016	0.0	37580	--	--	100 %	0 %	0 %	NTU
UF 2	PermeateTurbidity		0.017	0.0	37580	--	--	100 %	0 %	0 %	NTU
UF 3	PermeateTurbidity		0.018	0.0	37580	--	--	100 %	0 %	0 %	NTU
UF 1	PermeateTurbidityAfterBP	●	0.016	0.0	326	0.1	0.3	100 %	0 %	0 %	NTU
UF 2	PermeateTurbidityAfterBP	●	0.017	0.0	311	0.1	0.3	100 %	0 %	0 %	NTU
UF 3	PermeateTurbidityAfterBP	●	0.018	0.0	325	0.1	0.3	100 %	0 %	0 %	NTU

Turbidity Daily Averages

Asset	Parameter	Oct 01	Oct 02	Oct 03	Oct 04	Oct 05	Oct 06	Oct 07	Oct 08	Oct 09	Oct 10	Oct 11
UF 1	PermeateTurbidity	0.015	0.016	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015
UF 2	PermeateTurbidity	0.015	0.016	0.015	0.015	0.015	0.015	0.015	0.015	0.016	0.017	0.017
UF 3	PermeateTurbidity	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.016	0.017	0.017

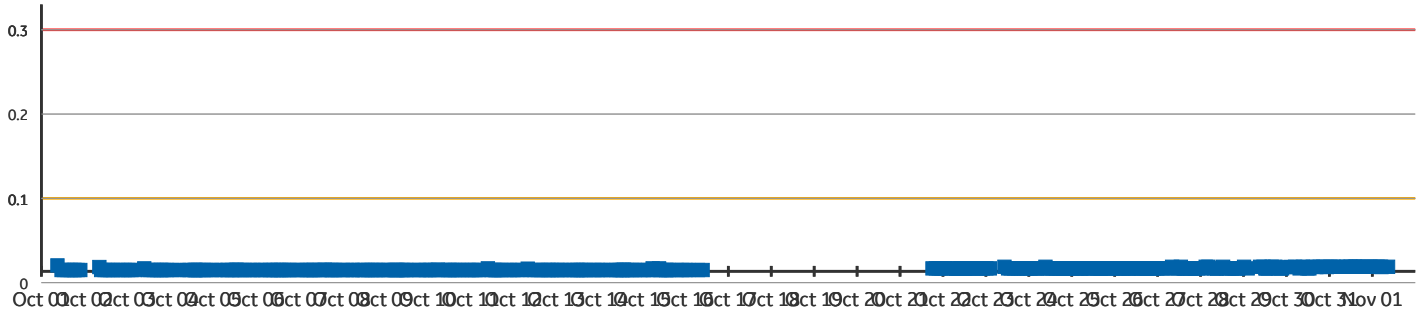
Asset	Parameter	Oct 01	Oct 02	Oct 03	Oct 04	Oct 05	Oct 06	Oct 07	Oct 08	Oct 09	Oct 10	Oct 11
UF 1	PermeateTurbidityAfterBP	0.016	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015
UF 2	PermeateTurbidityAfterBP	0.015	0.016	0.015	0.015	0.016	0.015	0.015	0.015	0.016	0.017	0.017
UF 3	PermeateTurbidityAfterBP	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.016	0.017	0.017

Asset	Oct 12	Oct 13	Oct 14	Oct 15	Oct 16	Oct 17	Oct 18	Oct 19	Oct 20	Oct 21	Oct 22	Oct 23	Oct 24	Oct 25	Oct 26
UF 1	0.015	0.015	0.015	0.015	0.015	--	--	--	--	0.017	0.017	0.017	0.017	0.017	0.017
UF 2	0.017	0.017	0.017	0.017	0.017	--	--	--	--	0.019	0.019	0.019	0.019	0.019	0.019
UF 3	0.017	0.017	0.017	0.017	0.017	--	--	--	--	0.019	0.019	0.019	0.02	0.021	0.021
UF 1	0.015	0.015	0.015	0.015	0.015	--	--	--	--	0.017	0.017	0.017	0.017	0.017	0.017
UF 2	0.017	0.017	0.017	0.017	0.017	--	--	--	--	0.019	0.019	0.019	0.019	0.019	0.019
UF 3	0.017	0.017	0.017	0.017	0.018	--	--	--	--	0.019	0.019	0.019	0.02	0.021	0.021

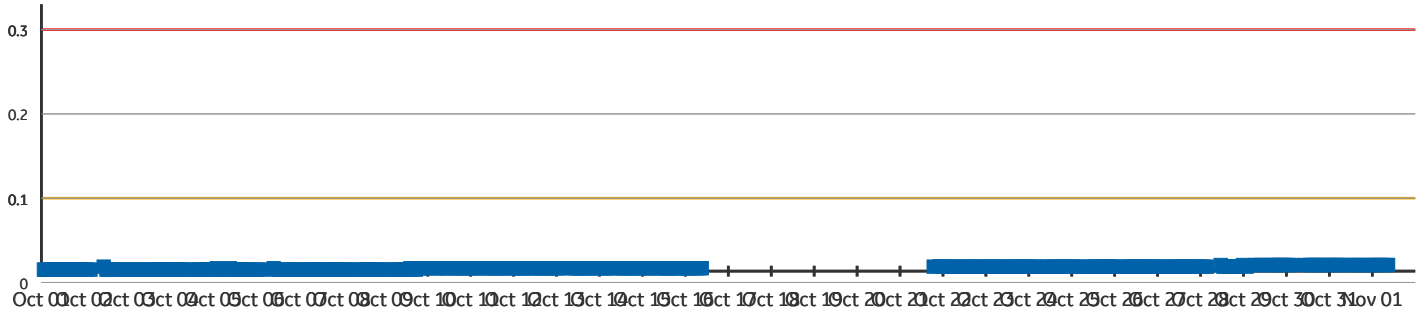
Asset	Oct 27	Oct 28	Oct 29	Oct 30	Oct 31	Nov 01
UF 1	0.017	0.017	0.017	0.018	0.019	0.019
UF 2	0.019	0.02	0.02	0.021	0.021	0.021
UF 3	0.021	0.021	0.021	0.021	0.021	0.021
UF 1	0.017	0.017	0.018	0.018	0.019	0.019
UF 2	0.019	0.019	0.021	0.021	0.021	0.021
UF 3	0.021	0.021	0.021	0.021	0.021	0.021

Turbidity Raw Data

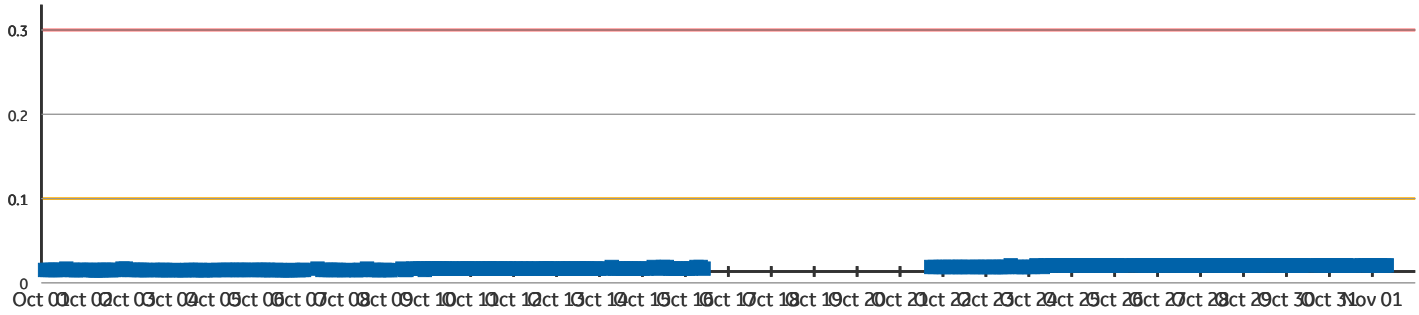
UF 1 - PermeateTurbidityAfterBP (NTU)



UF 2 - PermeateTurbidityAfterBP (NTU)



UF 3 - PermeateTurbidityAfterBP (NTU)



CERTIFICATE OF ANALYSIS

Work Order	:	**VA24C6118**		
Client	:	**Town of Ladysmith**	Laboratory	: ALS Environmental - Vancouver
Contact	:	Shawn Baker	Account Manager	: Thomas Chang
Address	:	410 Esplanade PO Box 220 Ladysmith British Columbia Canada V9G 1A2	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	:	----	Telephone	: +1 604 253 4188
Project	:	Arbutus Water Treatment - Weekly Sampling	Date Samples Received	: 02-Oct-2024 11:53
PO	:	10880	Date Analysis Commenced	: 02-Oct-2024
C-O-C number	:	17-Week 8	Issue Date	: 10-Oct-2024 10:31
Sampler	:	----		
Site	:	Town of Ladysmith		
Quote number	:	VA22-GMSM100-001 Tender# 2022-IS-20		
No. of samples received	:	4		
No. of samples analysed	:	4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Microbiology, Burnaby, British Columbia
Sanja Risticevic	Department Manager - LCMS	LCMS, Waterloo, Ontario
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
LOR: Limit of Reporting (detection limit).

Unit	*Description*
pH units	pH units
µS/cm	microsiemens per centimetre
NTU	nephelometric turbidity units
CU	colour units (1 cu = 1 mg/l pt)
mg/L	milligrams per litre
CFU/mL	colony forming units per millilitre
MPN/100mL	most probable number per hundred millilitres
µg/L	micrograms per litre

<: less than.
>: greater than.
Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Raw Water	UF Effluent	Treated Water (post reservoir)	Distribution system (WWTP)	----
Client sample ID									
Client sampling date / time					01-Oct-2024 10:30	01-Oct-2024 10:30	01-Oct-2024 10:30	01-Oct-2024 10:30	----
					VA24C6118-001	VA24C6118-002	VA24C6118-003	VA24C6118-004	----
					Result	Result	Result	Result	----
Physical Tests									
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L	----	----	10.6	----	----
Colour, true	----	E329/VA	5.0	CU	----	----	<5.0	----	----
Conductivity	----	E100/VA	2.0	µS/cm	----	----	36.6	----	----
pH	----	E108/VA	0.10	pH units	----	----	7.36	----	----
Turbidity	----	E121/VA	0.10	NTU	----	----	<0.10	----	----
Organic / Inorganic Carbon									
Carbon, dissolved inorganic [DIC]	----	E353-L/VA	0.50	mg/L	----	2.37	----	----	----
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L	1.75	1.76	----	----	----
Carbon, total organic [TOC]	----	E355-L/VA	0.50	mg/L	1.78	1.66	----	----	----
Microbiological Tests									
Heterotrophic plate count [HPC]	----	E020/VA	1	CFU/mL	----	----	<1	----	----
Coliforms, Escherichia coli [E. coli]	----	E010/VA	1	MPN/100 mL	----	----	<1	----	----
Coliforms, total	----	E010/VA	1	MPN/100 mL	----	----	<1	----	----
Total Metals									
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L	----	0.0335	----	----	----
Volatile Organic Compounds [THMs]									
Bromodichloromethane	75-27-4	E611B/VA	1.0	µg/L	----	----	2.3	2.8	----
Bromoform	75-25-2	E611B/VA	1.0	µg/L	----	----	<1.0	<1.0	----
Chloroform	67-66-3	E611B/VA	1.0	µg/L	----	----	48.0	60.1	----
Dibromochloromethane	124-48-1	E611B/VA	1.0	µg/L	----	----	<1.0	<1.0	----
Trihalomethanes [THMs], total	----	E611B/VA	2.0	µg/L	----	----	50.3	62.9	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

					Client sample ID	Raw Water	UF Effluent	Treated Water (post reservoir)	Distribution system (WWTP)	----
					Client sampling date / time	01-Oct-2024 10:30	01-Oct-2024 10:30	01-Oct-2024 10:30	01-Oct-2024 10:30	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit		VA24C6118-001	VA24C6118-002	VA24C6118-003	VA24C6118-004	----
						Result	Result	Result	Result	----
Volatile Organic Compounds [THMs] Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611B/VA	1.0	%		----	----	108	110	----
Difluorobenzene, 1,4-	540-36-3	E611B/VA	1.0	%		----	----	100	100	----
Haloacetic Acids										
Bromochloroacetic acid	5589-96-8	E750/WT	1.00	µg/L		----	----	<1.00	<1.00	----
Dibromoacetic acid	631-64-1	E750/WT	1.00	µg/L		----	----	<1.00	<1.00	----
Dichloroacetic acid	79-43-6	E750/WT	1.00	µg/L		----	----	17.4	21.4	----
Monobromoacetic acid	79-08-3	E750/WT	1.00	µg/L		----	----	<1.00	<1.00	----
Monochloroacetic acid	79-11-8	E750/WT	1.00	µg/L		----	----	<1.00	1.14	----
Trichloroacetic acid	76-03-9	E750/WT	1.00	µg/L		----	----	26.2	33.0	----
Haloacetic acids, total [HAA5]	n/a	E750/WT	5.00	µg/L		----	----	43.6	55.5	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

ALS Canada Ltd.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA24C6118**	Page	: 1 of 9
Client	: **Town of Ladysmith**	Laboratory	: ALS Environmental - Vancouver
Contact	: Shawn Baker	Account Manager	: Thomas Chang
Address	: 410 Esplanade PO Box 220 Ladysmith BC Canada V9G 1A2	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: Arbutus Water Treatment - Weekly Sampling	Date Samples Received	: 02-Oct-2024 11:53
PO	: 10880	Issue Date	: 10-Oct-2024 10:28
C-O-C number	: 17-Week 8		
Sampler	: ----		
Site	: Town of Ladysmith		
Quote number	: VA22-GMSM100-001 Tender# 2022-IS-20		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Matrix Spike Duplicate (MSD) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

CERTIFICATE OF ANALYSIS

Work Order	:	**VA24C6917**		
Client	:	**Town of Ladysmith**	Laboratory	: ALS Environmental - Vancouver
Contact	:	Shawn Baker	Account Manager	: Thomas Chang
Address	:	410 Esplanade PO Box 220 Ladysmith British Columbia Canada V9G 1A2	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	:	----	Telephone	: +1 604 253 4188
Project	:	Arbutus Water Treatment - Weekly Sampling	Date Samples Received	: 09-Oct-2024 15:10
PO	:	10880	Date Analysis Commenced	: 10-Oct-2024
C-O-C number	:	----	Issue Date	: 21-Oct-2024 12:51
Sampler	:	----		
Site	:	Town of Ladysmith		
Quote number	:	VA22-GMSM100-001 Tender# 2022-IS-20		
No. of samples received	:	4		
No. of samples analysed	:	4		

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This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Elke Tabora	Lab Analyst	Inorganics, Calgary, Alberta
Miles Gropen	Department Manager - Inorganics	Microbiology, Burnaby, British Columbia
Monica Ko	Lab Assistant	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Microbiology, Burnaby, British Columbia

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LOR: Limit of Reporting (detection limit).

Unit	*Description*
NTU	nephelometric turbidity units
CU	colour units (1 cu = 1 mg/l pt)
mg/L	milligrams per litre
pH units	pH units
µS/cm	microsiemens per centimetre
CFU/mL	colony forming units per millilitre
MPN/100mL	most probable number per hundred millilitres

<: less than.
>: greater than.
Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	Raw Water	DAF Effluent	UF Effluent	Treated Water (post reservoir)	----
				Client sampling date / time	08-Oct-2024 09:30	08-Oct-2024 09:30	08-Oct-2024 09:30	08-Oct-2024 09:30	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	VA24C6917-001	VA24C6917-002	VA24C6917-003	VA24C6917-004	----
					Result	Result	Result	Result	----
Physical Tests									
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L	----	----	----	13.1	----
Colour, true	----	E329/VA	5.0	CU	----	----	----	<5.0	----
Conductivity	----	E100/VA	2.0	µS/cm	----	----	----	54.9	----
pH	----	E108/VA	0.10	pH units	----	----	----	7.42	----
Turbidity	----	E121/VA	0.10	NTU	----	----	----	<0.10	----
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L	2.05	1.01	1.13	----	----
Carbon, total organic [TOC]	----	E355-L/CG	0.50	mg/L	1.81	1.16	0.80	----	----
Microbiological Tests									
Heterotrophic plate count [HPC]	----	E020/VA	1	CFU/mL	----	----	----	<1	----
Coliforms, Escherichia coli [E. coli]	----	E010/VA	1	MPN/100 mL	----	----	----	<1	----
Coliforms, total	----	E010/VA	1	MPN/100 mL	----	----	----	<1	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA24C6917**	Page	: 1 of 7
Client	: **Town of Ladysmith**	Laboratory	: ALS Environmental - Vancouver
Contact	: Shawn Baker	Account Manager	: Thomas Chang
Address	: 410 Esplanade PO Box 220 Ladysmith BC Canada V9G 1A2	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: Arbutus Water Treatment - Weekly Sampling	Date Samples Received	: 09-Oct-2024 15:10
PO	: 10880	Issue Date	: 21-Oct-2024 12:51
C-O-C number	: ----		
Sampler	: ----		
Site	: Town of Ladysmith		
Quote number	: VA22-GMSM100-001 Tender# 2022-IS-20		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

CERTIFICATE OF ANALYSIS

Work Order	: **VA24C7545**		
Client	: **Town of Ladysmith**	Laboratory	: ALS Environmental - Vancouver
Contact	: Shawn Baker	Account Manager	: Thomas Chang
Address	: 410 Esplanade PO Box 220 Ladysmith British Columbia Canada V9G 1A2	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: Arbutus Water Treatment Plant - Weekly Sampling	Date Samples Received	: 16-Oct-2024 11:40
PO	: PO #10880	Date Analysis Commenced	: 16-Oct-2024
C-O-C number	: ----	Issue Date	: 21-Oct-2024 13:42
Sampler	: ----		
Site	: Town of Ladysmith		
Quote number	: VA22-GMSM100-001 Tender# 2022-IS-20		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Monica Ko	Lab Assistant	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Microbiology, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
LOR: Limit of Reporting (detection limit).

Unit	*Description*
NTU	nephelometric turbidity units
CU	colour units (1 cu = 1 mg/l pt)
mg/L	milligrams per litre
pH units	pH units
µS/cm	microsiemens per centimetre
CFU/mL	colony forming units per millilitre
MPN/100mL	most probable number per hundred millilitres

<: less than.
>: greater than.
Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	Raw Water	DAF Effluent	UF Effluent	Treated Water (post reservoir)	----
				Client sampling date / time	15-Oct-2024 10:30	15-Oct-2024 10:30	15-Oct-2024 10:30	15-Oct-2024 10:30	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	VA24C7545-001	VA24C7545-002	VA24C7545-003	VA24C7545-004	----
					Result	Result	Result	Result	----
Physical Tests									
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L	----	----	----	12.8	----
Colour, true	----	E329/VA	5.0	CU	----	----	----	<5.0	----
Conductivity	----	E100/VA	2.0	µS/cm	----	----	----	56.2	----
pH	----	E108/VA	0.10	pH units	----	----	----	7.40	----
Turbidity	----	E121/VA	0.10	NTU	----	----	----	<0.10	----
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L	1.79	0.90	0.73	----	----
Carbon, total organic [TOC]	----	E355-L/VA	0.50	mg/L	1.88	0.95	0.92	----	----
Microbiological Tests									
Heterotrophic plate count [HPC]	----	E020/VA	1	CFU/mL	----	----	----	<1	----
Coliforms, Escherichia coli [E. coli]	----	E010/VA	1	MPN/100 mL	----	----	----	<1	----
Coliforms, total	----	E010/VA	1	MPN/100 mL	----	----	----	<1	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA24C7545**	Page	: 1 of 7
Client	: **Town of Ladysmith**	Laboratory	: ALS Environmental - Vancouver
Contact	: Shawn Baker	Account Manager	: Thomas Chang
Address	: 410 Esplanade PO Box 220 Ladysmith BC Canada V9G 1A2	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: Arbutus Water Treatment Plant - Weekly Sampling	Date Samples Received	: 16-Oct-2024 11:40
PO	: PO #10880	Issue Date	: 21-Oct-2024 13:43
C-O-C number	: ----		
Sampler	: ----		
Site	: Town of Ladysmith		
Quote number	: VA22-GMSM100-001 Tender# 2022-IS-20		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

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CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

CERTIFICATE OF ANALYSIS

Work Order	:	**VA24C8400**			
Client	:	**Town of Ladysmith**	Laboratory	:	ALS Environmental - Vancouver
Contact	:	Shawn Baker	Account Manager	:	Thomas Chang
Address	:	410 Esplanade PO Box 220 Ladysmith British Columbia Canada V9G 1A2	Address	:	8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	:	----	Telephone	:	+1 604 253 4188
Project	:	Arbutus Water Treatment Plant - Monthly Sampling	Date Samples Received	:	23-Oct-2024 12:10
PO	:	10880	Date Analysis Commenced	:	25-Oct-2024
C-O-C number	:	----	Issue Date	:	30-Oct-2024 07:53
Sampler	:	----			
Site	:	Town of Ladysmith			
Quote number	:	VA22-GMSM100-001 Tender# 2022-IS-20			
No. of samples received	:	1			
No. of samples analysed	:	1			

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Sanja Risticevic	Department Manager - LCMS	LCMS, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

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Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
LOR: Limit of Reporting (detection limit).

Unit	*Description*
mg/L	milligrams per litre
µg/L	micrograms per litre

<: less than.
>: greater than.
Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

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Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	----	----	----	----
					Client sampling date / time	22-Oct-2024 10:30	----	----	----	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	VA24C8400-001	----	----	----	----
					Result	----	----	----	----
Total Metals									
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L	0.0127	----	----	----	----
Volatile Organic Compounds [THMs]									
Bromodichloromethane	75-27-4	E611B/VA	1.0	µg/L	1.8	----	----	----	----
Bromoform	75-25-2	E611B/VA	1.0	µg/L	<1.0	----	----	----	----
Chloroform	67-66-3	E611B/VA	1.0	µg/L	21.7	----	----	----	----
Dibromochloromethane	124-48-1	E611B/VA	1.0	µg/L	<1.0	----	----	----	----
Trihalomethanes [THMs], total	----	E611B/VA	2.0	µg/L	23.5	----	----	----	----
Volatile Organic Compounds [THMs] Surrogates									
Bromofluorobenzene, 4-	460-00-4	E611B/VA	1.0	%	91.2	----	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611B/VA	1.0	%	104	----	----	----	----
Haloacetic Acids									
Bromochloroacetic acid	5589-96-8	E750/WT	1.00	µg/L	<1.00	----	----	----	----
Dibromoacetic acid	631-64-1	E750/WT	1.00	µg/L	<1.00	----	----	----	----
Dichloroacetic acid	79-43-6	E750/WT	1.00	µg/L	5.96	----	----	----	----
Monobromoacetic acid	79-08-3	E750/WT	1.00	µg/L	<1.00	----	----	----	----
Monochloroacetic acid	79-11-8	E750/WT	1.00	µg/L	<1.00	----	----	----	----
Trichloroacetic acid	76-03-9	E750/WT	1.00	µg/L	6.96	----	----	----	----
Haloacetic acids, total [HAA5]	n/a	E750/WT	5.00	µg/L	12.9	----	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA24C8400**	Page	: 1 of 5
Client	: **Town of Ladysmith**	Laboratory	: ALS Environmental - Vancouver
Contact	: Shawn Baker	Account Manager	: Thomas Chang
Address	: 410 Esplanade PO Box 220 Ladysmith BC Canada V9G 1A2	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: Arbutus Water Treatment Plant - Monthly Sampling	Date Samples Received	: 23-Oct-2024 12:10
PO	: 10880	Issue Date	: 30-Oct-2024 07:53
C-O-C number	: ----		
Sampler	: ----		
Site	: Town of Ladysmith		
Quote number	: VA22-GMSM100-001 Tender# 2022-IS-20		
No. of samples received	: 1		
No. of samples analysed	: 1		

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DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

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Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Matrix Spike Duplicate (MSD) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

CERTIFICATE OF ANALYSIS

Work Order	:	**VA24C8401**			
Client	:	**Town of Ladysmith**	Laboratory	:	ALS Environmental - Vancouver
Contact	:	Shawn Baker	Account Manager	:	Thomas Chang
Address	:	410 Esplanade PO Box 220 Ladysmith British Columbia Canada V9G 1A2	Address	:	8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	:	----	Telephone	:	+1 604 253 4188
Project	:	Arbutus Water Treatment Plant - Weekly Sampling	Date Samples Received	:	23-Oct-2024 12:10
PO	:	10880	Date Analysis Commenced	:	23-Oct-2024
C-O-C number	:	----	Issue Date	:	28-Oct-2024 15:42
Sampler	:	----			
Site	:	Town of Ladysmith			
Quote number	:	VA22-GMSM100-001 Tender# 2022-IS-20			
No. of samples received	:	4			
No. of samples analysed	:	4			

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- Analytical Results

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Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Monica Ko	Lab Assistant	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Microbiology, Burnaby, British Columbia

General Comments

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pH units	pH units
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CFU/mL	colony forming units per millilitre
MPN/100mL	most probable number per hundred millilitres

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Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	Raw Water	DAF Effluent	UF Effluent	Treated Water (post reservoir)	----
				Client sampling date / time	22-Oct-2024 10:30	22-Oct-2024 10:30	22-Oct-2024 10:30	22-Oct-2024 10:30	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	VA24C8401-001	VA24C8401-002	VA24C8401-003	VA24C8401-004	----
					Result	Result	Result	Result	----
Physical Tests									
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L	----	----	----	14.3	----
Colour, true	----	E329/VA	5.0	CU	----	----	----	<5.0	----
Conductivity	----	E100/VA	2.0	µS/cm	----	----	----	63.8	----
pH	----	E108/VA	0.10	pH units	----	----	----	6.85	----
Turbidity	----	E121/VA	0.10	NTU	----	----	----	0.12	----
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L	2.56	1.24	1.24	----	----
Carbon, total organic [TOC]	----	E355-L/VA	0.50	mg/L	2.42	1.37	1.19	----	----
Microbiological Tests									
Heterotrophic plate count [HPC]	----	E020/VA	1	CFU/mL	----	----	----	<1	----
Coliforms, Escherichia coli [E. coli]	----	E010/VA	1	MPN/100 mL	----	----	----	<1	----
Coliforms, total	----	E010/VA	1	MPN/100 mL	----	----	----	<1	----

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Please refer to the Accreditation section for an explanation of analyte accreditations.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA24C8401**	Page	: 1 of 7
Client	: **Town of Ladysmith**	Laboratory	: ALS Environmental - Vancouver
Contact	: Shawn Baker	Account Manager	: Thomas Chang
Address	: 410 Esplanade PO Box 220 Ladysmith BC Canada V9G 1A2	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: Arbutus Water Treatment Plant - Weekly Sampling	Date Samples Received	: 23-Oct-2024 12:10
PO	: 10880	Issue Date	: 28-Oct-2024 15:42
C-O-C number	: ----		
Sampler	: ----		
Site	: Town of Ladysmith		
Quote number	: VA22-GMSM100-001 Tender# 2022-IS-20		
No. of samples received	: 4		
No. of samples analysed	: 4		

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Key

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CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

CERTIFICATE OF ANALYSIS

Work Order	: **VA24C9217**		
Client	: **Town of Ladysmith**	Laboratory	: ALS Environmental - Vancouver
Contact	: Shawn Baker	Account Manager	: Thomas Chang
Address	: 410 Esplanade PO Box 220 Ladysmith British Columbia Canada V9G 1A2	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: Arbutus Water Treatment Plant - Weekly Sampling	Date Samples Received	: 30-Oct-2024 11:00
PO	: 10880	Date Analysis Commenced	: 30-Oct-2024
C-O-C number	: ----	Issue Date	: 04-Nov-2024 15:04
Sampler	: ----		
Site	: Town of Ladysmith		
Quote number	: VA22-GMSM100-001 Tender# 2022-IS-20		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Monica Ko	Lab Assistant	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Microbiology, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
LOR: Limit of Reporting (detection limit).

Unit	*Description*
pH units	pH units
µS/cm	microsiemens per centimetre
NTU	nephelometric turbidity units
CU	colour units (1 cu = 1 mg/l pt)
mg/L	milligrams per litre
CFU/mL	colony forming units per millilitre
MPN/100mL	most probable number per hundred millilitres

<: less than.
>: greater than.
Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Workorder Comments

Sample(s) 004: Exceeded Recommended Holding Time prior to receipt at the lab for HPC analysis.

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	Raw Water	DAF Effluent	UF Effluent	Treated Water (post reservoir)	----
				Client sampling date / time	29-Oct-2024 10:00	29-Oct-2024 10:00	29-Oct-2024 10:00	29-Oct-2024 10:00	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	VA24C9217-001	VA24C9217-002	VA24C9217-003	VA24C9217-004	----
					Result	Result	Result	Result	----
Physical Tests									
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L	----	----	----	14.3	----
Colour, true	----	E329/VA	5.0	CU	----	----	----	<5.0	----
Conductivity	----	E100/VA	2.0	µS/cm	----	----	----	61.8	----
pH	----	E108/VA	0.10	pH units	----	----	----	7.38	----
Turbidity	----	E121/VA	0.10	NTU	----	----	----	<0.10	----
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L	2.22	1.04	1.07	----	----
Carbon, total organic [TOC]	----	E355-L/VA	0.50	mg/L	2.48	0.95	0.87	----	----
Microbiological Tests									
Heterotrophic plate count [HPC]	----	E020/VA	1	CFU/mL	----	----	----	<1	----
Coliforms, Escherichia coli [E. coli]	----	E010/VA	1	MPN/100 mL	----	----	----	<1	----
Coliforms, total	----	E010/VA	1	MPN/100 mL	----	----	----	<1	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA24C9217**	Page	: 1 of 7
Client	: **Town of Ladysmith**	Laboratory	: ALS Environmental - Vancouver
Contact	: Shawn Baker	Account Manager	: Thomas Chang
Address	: 410 Esplanade PO Box 220 Ladysmith BC Canada V9G 1A2	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: Arbutus Water Treatment Plant - Weekly Sampling	Date Samples Received	: 30-Oct-2024 11:00
PO	: 10880	Issue Date	: 04-Nov-2024 13:33
C-O-C number	: ----		
Sampler	: ----		
Site	: Town of Ladysmith		
Quote number	: VA22-GMSM100-001 Tender# 2022-IS-20		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.