

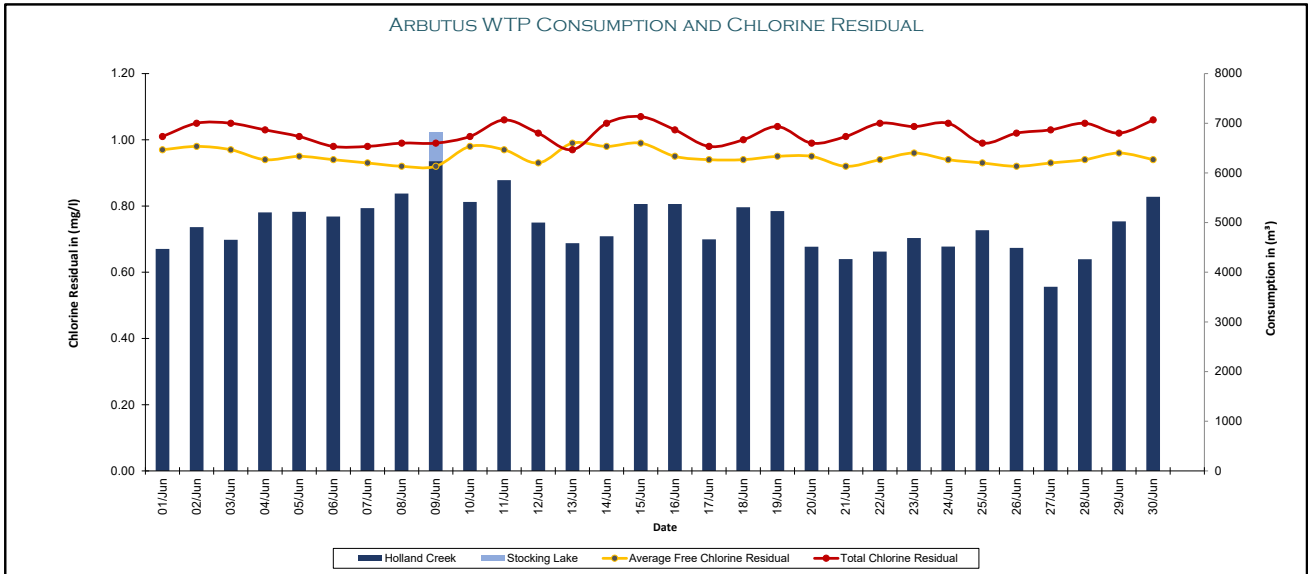
# TOWN OF LADYSMITH - ARBUTUS WATER TREATMENT PLANT

JUNE 2025 - 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		CFU	MPN	MPN	mg/l	mg/l	mg/l
01-Jun		4470	4470	0.95	0.98	0.97	1.01	161						
02-Jun		4910	4910	0.96	1.00	0.98	1.05	161						
03-Jun		4654	4654	0.97	0.99	0.97	1.05	161	< 1	< 1	< 1	0.0124	0.0124	0.0061
04-Jun		5206	5206	0.94	0.98	0.94	1.03	161						
05-Jun		5216	5216	0.93	0.96	0.95	1.01	164						
06-Jun		5121	5121	0.94	0.96	0.94	0.98	160						
07-Jun		5292	5292	0.92	0.95	0.93	0.98	150						
08-Jun		5585	5585	0.90	0.93	0.92	0.99	132						
09-Jun	577	6237	6814	0.92	0.94	0.92	0.99	141						
10-Jun		5417	5417	0.91	0.98	0.98	1.01	183						
11-Jun		5855	5855	0.96	0.99	0.97	1.06	172	< 1	< 1	< 1			
12-Jun		5000	5000	0.93	0.97	0.93	1.02	152						
13-Jun		4585	4585	0.98	1.01	0.99	0.97	144						
14-Jun		4725	4725	0.98	1.00	0.98	1.05	157						
15-Jun		5375	5375	0.98	1.00	0.99	1.07	160						
16-Jun		5375	5375	0.94	0.99	0.95	1.03	157						
17-Jun		4663	4663	0.93	0.96	0.94	0.98	177						
18-Jun		5310	5310	0.93	0.96	0.94	1.00	153	< 1	< 1	< 1			
19-Jun		5232	5232	0.92	0.95	0.95	1.04	123						
20-Jun		4514	4514	0.94	0.95	0.95	0.99	167						
21-Jun		4265	4265	0.92	0.95	0.92	1.01	140						
22-Jun		4415	4415	0.91	0.94	0.94	1.05	182						
23-Jun		4690	4690	0.94	0.97	0.96	1.04	167						
24-Jun		4517	4517	0.94	0.97	0.94	1.05	164						
25-Jun		4846	4846	0.93	0.95	0.93	0.99	167	< 1	< 1	< 1			
26-Jun		4490	4490	0.90	0.96	0.92	1.02	157						
27-Jun		3709	3709	0.91	0.93	0.93	1.03	147						
28-Jun		4261	4261	0.91	0.95	0.94	1.05	161						
29-Jun		5025	5025	0.93	0.96	0.96	1.02	181						
30-Jun		5520	5520	0.94	0.97	0.94	1.06	181						

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

Total	577	148480	149057											
Average	577	4949	4969	0.94	0.97	0.95	1.02	159	< 1	< 1	< 1	0.0124	0.0124	0.00612



Town of Ladysmith Arbutus DWTP

Monthly LRV and Turbidity Report

05/31/2025 - 07/01/2025

LRV Monthly Average

Asset	Parameter	Health	Avg	Std. Dev	Points	LL	L	%In	% between L and LL	% < LL	Unit
UF 1	LRV	<div></div>	5.0	0.0	32	4.25	4.5	100 %	0 %	0 %	#
UF 2	LRV	<div></div>	5.0	0.0	32	4.25	4.5	100 %	0 %	0 %	#
UF 3	LRV	<div></div>	5.0	0.0	32	4.25	4.5	100 %	0 %	0 %	#

LRV Daily Values

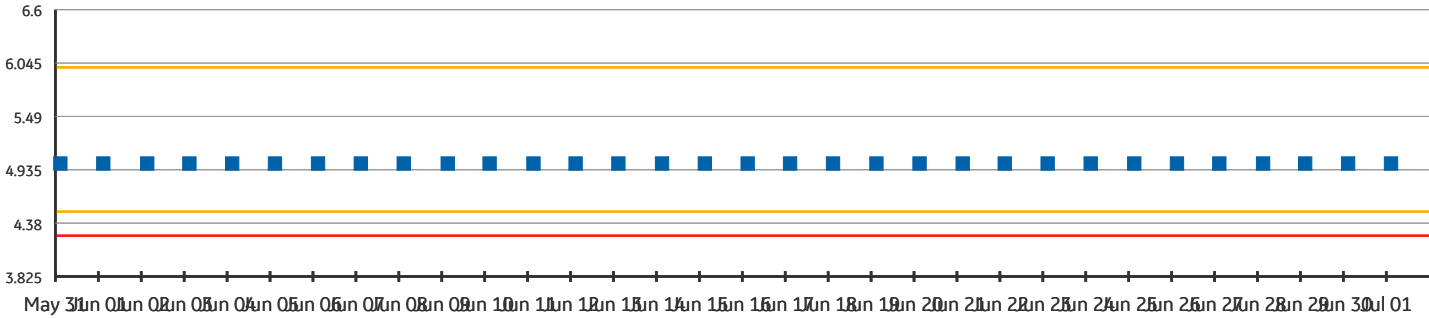
Asset	Parameter	May 31	Jun 01	Jun 02	Jun 03	Jun 04	Jun 05	Jun 06	Jun 07	Jun 08	Jun 09	Jun 10	Jun 11
UF 1	LRV	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
UF 2	LRV	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
UF 3	LRV	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0

Asset	Jun 12	Jun 13	Jun 14	Jun 15	Jun 16	Jun 17	Jun 18	Jun 19	Jun 20	Jun 21	Jun 22	Jun 23	Jun 24	Jun 25	Jun 26	Jun 27
UF 1	5.0	5.0	5.0	5.0	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	5.0	5.0	5.0	5.0	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	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0

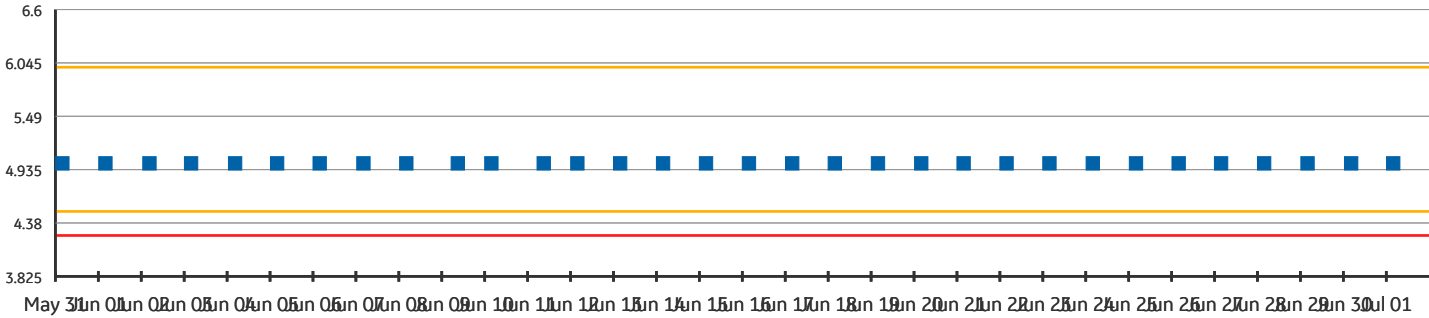
Asset	Jun 28	Jun 29	Jun 30	Jul 01
UF 1	5.0	5.0	5.0	5.0
UF 2	5.0	5.0	5.0	5.0
UF 3	5.0	5.0	5.0	5.0

LRV Raw Data

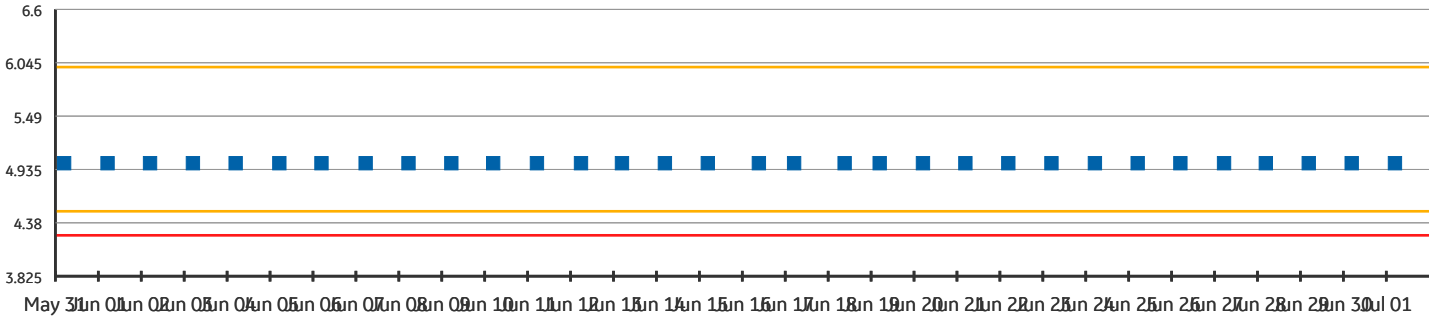
UF 1 - LRV (#)



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		0.014	0.0	45217	--	--	100 %	0 %	0 %	NTU
UF 2	PermeateTurbidity		0.015	0.01	45217	--	--	100 %	0 %	0 %	NTU
UF 3	PermeateTurbidity		0.015	0.0	45217	--	--	100 %	0 %	0 %	NTU
UF 1	PermeateTurbidityAfterBP	●	0.014	0.0	558	0.1	0.3	100 %	0 %	0 %	NTU
UF 2	PermeateTurbidityAfterBP	●	0.016	0.0	573	0.1	0.3	100 %	0 %	0 %	NTU
UF 3	PermeateTurbidityAfterBP	●	0.014	0.0	590	0.1	0.3	100 %	0 %	0 %	NTU

Turbidity Daily Averages

Asset	Parameter	May 31	Jun 01	Jun 02	Jun 03	Jun 04	Jun 05	Jun 06	Jun 07	Jun 08	Jun 09	Jun 10
UF 1	PermeateTurbidity	0.019	0.019	0.019	0.019	0.02	0.016	0.013	0.013	0.012	0.011	0.012
UF 2	PermeateTurbidity	0.017	0.017	0.017	0.017	0.017	0.016	0.013	0.013	0.013	0.014	0.013
UF 3	PermeateTurbidity	0.021	0.022	0.022	0.023	0.023	0.017	0.011	0.011	0.011	0.011	0.012

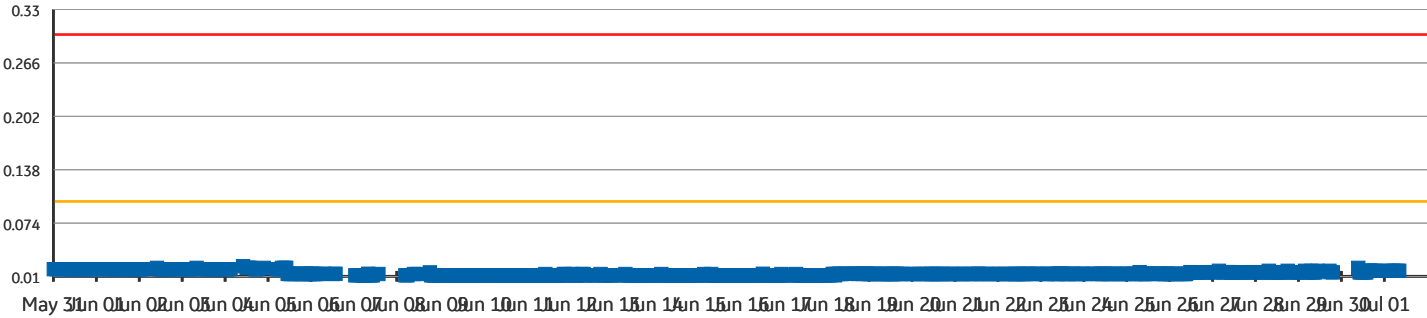
Asset	Parameter	May 31	Jun 01	Jun 02	Jun 03	Jun 04	Jun 05	Jun 06	Jun 07	Jun 08	Jun 09	Jun 10
UF 1	PermeateTurbidityAfterBP	0.019	0.019	0.019	0.019	0.02	0.015	0.013	0.012	0.012	0.011	0.011
UF 2	PermeateTurbidityAfterBP	0.017	0.017	0.017	0.017	0.017	0.017	0.013	0.013	0.013	0.014	0.013
UF 3	PermeateTurbidityAfterBP	0.021	0.021	0.022	0.023	0.023	0.017	0.011	0.012	0.012	0.011	0.012

Asset	Jun 11	Jun 12	Jun 13	Jun 14	Jun 15	Jun 16	Jun 17	Jun 18	Jun 19	Jun 20	Jun 21	Jun 22	Jun 23	Jun 24	Jun 25
UF 1	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
UF 2	0.014	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.014
UF 3	0.012	0.012	0.012	0.012	0.011	0.012	0.012	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.014
UF 1	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
UF 2	0.014	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
UF 3	0.012	0.011	0.012	0.011	0.011	0.012	0.012	0.012	0.013	0.013	0.013	0.013	0.013	0.013	0.014

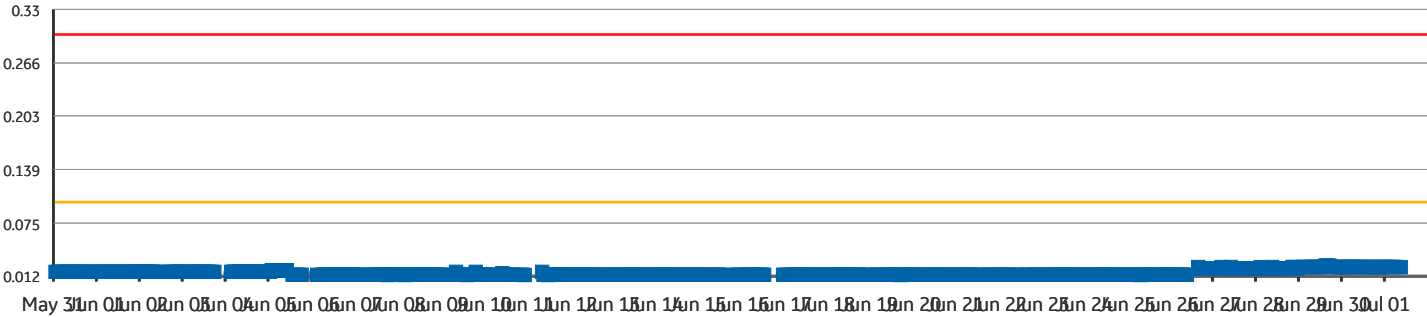
Asset	Jun 26	Jun 27	Jun 28	Jun 29	Jun 30	Jul 01
UF 1	0.014	0.015	0.015	0.016	0.017	0.017
UF 2	0.019	0.021	0.021	0.023	0.023	0.023
UF 3	0.015	0.015	0.015	0.015	0.017	0.017
UF 1	0.014	0.015	0.015	0.016	0.016	0.017
UF 2	0.016	0.021	0.021	0.023	0.023	0.023
UF 3	0.015	0.015	0.015	0.015	0.016	0.017

Turbidity Raw Data

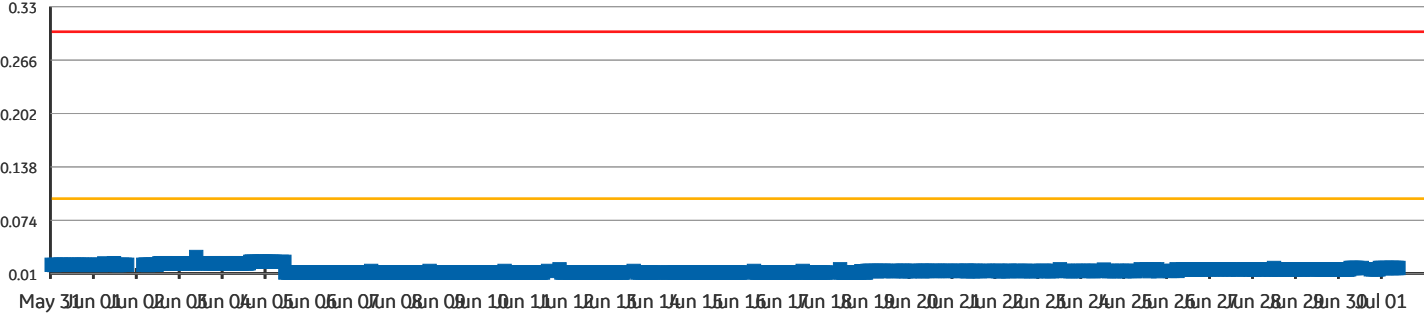
UF 1 - PermeateTurbidityAfterBP (NTU)



UF 2 - PermeateTurbidityAfterBP (NTU)



UF 3 - PermeateTurbidityAfterBP (NTU)



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**CERTIFICATE OF ANALYSIS**

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<b>Work Order</b>	: <b>VA25B3241</b>	<b>Laboratory</b>	: ALS Environmental - Vancouver
<b>Client</b>	: <b>Town of Ladysmith</b>	<b>Account Manager</b>	: Kevin Bhikadia
<b>Contact</b>	: Shawn Baker	<b>Address</b>	: 8081 Lougheed Highway
<b>Address</b>	: 410 Esplanade PO Box 220 Ladysmith British Columbia Canada V9G 1A2		: Burnaby BC Canada V5A 1W9
<b>Telephone</b>	: ----	<b>E-mail</b>	: Kevin.Bhikadia@alsglobal.com
<b>Project</b>	: Arbutus Water Treatment Plant - Monthly Sampling	<b>Telephone</b>	: +1 604 253 4188
<b>PO</b>	: 10940	<b>Date Samples Received</b>	: 04-Jun-2025 09:30
<b>C-O-C number</b>	: ----	<b>Date Analysis Commenced</b>	: 06-Jun-2025
<b>Sampler</b>	: ----	<b>Issue Date</b>	: 17-Jun-2025 15:31
<b>Site</b>	: Town of Ladysmith		
<b>Quote number</b>	: Town of Ladysmith Standing Offer		
<b>No. of samples received</b>	: 1		
<b>No. of samples analysed</b>	: 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).

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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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Ilmaz Badbezanchi		Metals, Burnaby, British Columbia
Janice Leung		Organics, Burnaby, British Columbia
Sanja Risticvic		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.

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
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.

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					Treated Water (post reservoir)	----	----	----	----
Client sampling date / time					03-Jun-2025 10:30	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25B3241-001	----	----	----	----
					Result	----	----	----	----
Total Metals									
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L	0.0124	----	----	----	----
Volatile Organic Compounds [THMs]									
Bromodichloromethane	75-27-4	E611B/VA	1.0	µg/L	1.1	----	----	----	----
Bromoform	75-25-2	E611B/VA	1.0	µg/L	<1.0	----	----	----	----
Chloroform	67-66-3	E611B/VA	1.0	µg/L	11.3	----	----	----	----
Dibromochloromethane	124-48-1	E611B/VA	1.0	µg/L	<1.0	----	----	----	----
Trihalomethanes [THMs], total	----	E611B/VA	2.0	µg/L	12.4	----	----	----	----
Volatile Organic Compounds [THMs] Surrogates									
Bromofluorobenzene, 4-	460-00-4	E611B/VA	1.0	%	89.5	----	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611B/VA	1.0	%	101	----	----	----	----
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	2.98	----	----	----	----
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	3.14	----	----	----	----
Haloacetic acids, total [HAA5]	n/a	E750/WT	5.00	µg/L	6.12	----	----	----	----

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



## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>VA25B3241</b>	Page	: 1 of 5
Client	: <b>Town of Ladysmith</b>	Laboratory	: ALS Environmental - Vancouver
Contact	: Shawn Baker	Account Manager	: Kevin Bhikadia
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	: 04-Jun-2025 09:30
PO	: 10940	Issue Date	: 17-Jun-2025 15:27
C-O-C number	: ----		
Sampler	: ----		
Site	: Town of Ladysmith		
Quote number	: Town of Ladysmith Standing Offer_V2		
No. of samples received	: 1		
No. of samples analysed	: 1		

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)***

- No Analysis Holding Time Outliers exist.

### ***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.

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**CERTIFICATE OF ANALYSIS**

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<b>Work Order</b>	: <b>VA25B3072</b>		
<b>Client</b>	: <b>Town of Ladysmith</b>	<b>Laboratory</b>	: ALS Environmental - Vancouver
<b>Contact</b>	: Shawn Baker	<b>Account Manager</b>	: Kevin Bhikadia
<b>Address</b>	: 410 Esplanade PO Box 220 Ladysmith British Columbia Canada V9G 1A2	<b>Address</b>	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
<b>Telephone</b>	: ----	<b>E-mail</b>	: Kevin.Bhikadia@alsglobal.com
<b>Project</b>	: Arbutus Water Treatment Plant - Weekly Sampling	<b>Telephone</b>	: +1 604 253 4188
<b>PO</b>	: 10940	<b>Date Samples Received</b>	: 04-Jun-2025 09:30
<b>C-O-C number</b>	: ----	<b>Date Analysis Commenced</b>	: 04-Jun-2025
<b>Sampler</b>	: ----	<b>Issue Date</b>	: 10-Jun-2025 16:49
<b>Site</b>	: Town of Ladysmith		
<b>Quote number</b>	: Town of Ladysmith Standing Offer		
<b>No. of samples received</b>	: 4		
<b>No. of samples analysed</b>	: 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).

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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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Lindsay Gung	Department Manager - Inorganics	Microbiology, Burnaby, British Columbia
Monica Ko	Supervisor - Inorganic	Inorganics, Burnaby, British Columbia
Vicky Chen	Lab Assistant	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.

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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
-	no units
CFU/mL	colony forming units per millilitre
CU	colour units (1 cu = 1 mg/l pt)
mg/L	milligrams per litre
MPN/100mL	most probable number per hundred millilitres
NTU	nephelometric turbidity units
pH units	pH units
µS/cm	microsiemens per centimetre

<: 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.

Work Order : VA25B3072  
Client : Town of Ladysmith  
Project : Arbutus Water Treatment Plant - Weekly Sampling

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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						03-Jun-2025 10:30	03-Jun-2025 10:30	03-Jun-2025 10:30	03-Jun-2025 10:30	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25B3072-001	VA25B3072-002	VA25B3072-003	VA25B3072-004	----	----
					Result	Result	Result	Result	----	----
Sample Preparation										
Dissolved carbon filtration location	----	EP358/VA	-	-	lab	lab	lab	----	----	----
Physical Tests										
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L	----	----	----	13.4	----	----
Colour, true	----	E329/VA	5.0	CU	----	----	----	<5.0	----	----
Conductivity	----	E100/VA	2.0	µS/cm	----	----	----	57.5	----	----
pH	----	E108/VA	0.10	pH units	----	----	----	7.22	----	----
Turbidity	----	E121/VA	0.10	NTU	----	----	----	<0.10	----	----
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L	2.01	1.01	0.85	----	----	----
Carbon, total organic [TOC]	----	E355-L/VA	0.50	mg/L	1.88	0.95	0.81	----	----	----
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 qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA25B3072	Page	: 1 of 7
Client	: Town of Ladysmith	Laboratory	: ALS Environmental - Vancouver
Contact	: Shawn Baker	Account Manager	: Kevin Bhikadia
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	: 04-Jun-2025 09:30
PO	: 10940	Issue Date	: 10-Jun-2025 16:48
C-O-C number	: ----		
Sampler	: ----		
Site	: Town of Ladysmith		
Quote number	: Town of Ladysmith Standing Offer_V2		
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***

- No Quality Control Sample Frequency Outliers occur.



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**CERTIFICATE OF ANALYSIS**

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<b>Work Order</b>	: <b>VA25B3964</b>	<b>Laboratory</b>	: ALS Environmental - Vancouver
<b>Client</b>	: <b>Town of Ladysmith</b>	<b>Account Manager</b>	: Kevin Bhikadia
<b>Contact</b>	: Shawn Baker	<b>Address</b>	: 8081 Lougheed Highway
<b>Address</b>	: 410 Esplanade PO Box 220 Ladysmith British Columbia Canada V9G 1A2		: Burnaby BC Canada V5A 1W9
<b>Telephone</b>	: ----	<b>E-mail</b>	: Kevin.Bhikadia@alsglobal.com
<b>Project</b>	: Arbutus Water Treatment Plant - Weekly Sampling	<b>Telephone</b>	: +1 604 253 4188
<b>PO</b>	: 10940	<b>Date Samples Received</b>	: 12-Jun-2025 10:05
<b>C-O-C number</b>	: ----	<b>Date Analysis Commenced</b>	: 12-Jun-2025
<b>Sampler</b>	: ----	<b>Issue Date</b>	: 16-Jun-2025 16:13
<b>Site</b>	: Town of Ladysmith		
<b>Quote number</b>	: Town of Ladysmith Standing Offer		
<b>No. of samples received</b>	: 4		
<b>No. of samples analysed</b>	: 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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anita Chuang		Inorganics, Burnaby, British Columbia
Dinesha Hewabaddege		Microbiology, Burnaby, British Columbia
Lindsay Gung		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
-	no units
CFU/mL	colony forming units per millilitre
CU	colour units (1 cu = 1 mg/l pt)
mg/L	milligrams per litre
MPN/100mL	most probable number per hundred millilitres
NTU	nephelometric turbidity units
pH units	pH units
µS/cm	microsiemens per centimetre

<: 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.

Work Order : VA25B3964  
Client : Town of Ladysmith  
Project : Arbutus Water Treatment Plant - Weekly Sampling

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## Analytical Results

Sub-Matrix: Water  
 (Matrix: Water)

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Raw Water	DAF Effluent	UF Effluent	Treated Water (post reservoir)	----
Client sampling date / time					11-Jun-2025 10:30	11-Jun-2025 10:30	11-Jun-2025 10:30	11-Jun-2025 10:30	----	
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25B3964-001	VA25B3964-002	VA25B3964-003	VA25B3964-004	----	
					Result	Result	Result	Result	----	
Sample Preparation										
Dissolved carbon filtration location	----	EP358/VA	-	-	lab	lab	lab	----	----	
Physical Tests										
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L	----	----	----	13.2	----	
Colour, true	----	E329/VA	5.0	CU	----	----	----	<5.0	----	
Conductivity	----	E100/VA	2.0	µS/cm	----	----	----	56.1	----	
pH	----	E108/VA	0.10	pH units	----	----	----	7.46	----	
Turbidity	----	E121/VA	0.10	NTU	----	----	----	<0.10	----	
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L	2.64	0.87	0.95	----	----	
Carbon, total organic [TOC]	----	E355-L/VA	0.50	mg/L	2.19	1.10	0.86	----	----	
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 qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>VA25B3964</b>	Page	: 1 of 8
Client	: <b>Town of Ladysmith</b>	Laboratory	: ALS Environmental - Vancouver
Contact	: Shawn Baker	Account Manager	: Kevin Bhikadia
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	: 12-Jun-2025 10:05
PO	: 10940	Issue Date	: 16-Jun-2025 16:13
C-O-C number	: ----		
Sampler	: ----		
Site	: Town of Ladysmith		
Quote number	: Town of Ladysmith Standing Offer_V2		
No. of samples received	: 4		
No. of samples analysed	: 4		

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### 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 Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate 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

<b>Work Order</b>	: <b>VA25B4720</b>		
<b>Client</b>	: <b>Town of Ladysmith</b>	<b>Laboratory</b>	: ALS Environmental - Vancouver
<b>Contact</b>	: Shawn Baker	<b>Account Manager</b>	: Kevin Bhikadia
<b>Address</b>	: 410 Esplanade PO Box 220 Ladysmith British Columbia Canada V9G 1A2	<b>Address</b>	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
<b>Telephone</b>	: ----	<b>E-mail</b>	: Kevin.Bhikadia@alsglobal.com
<b>Project</b>	: Arbutus Water Treatment Plant - Weekly Sampling	<b>Telephone</b>	: +1 604 253 4188
<b>PO</b>	: 10940	<b>Date Samples Received</b>	: 19-Jun-2025 12:00
<b>C-O-C number</b>	: ----	<b>Date Analysis Commenced</b>	: 19-Jun-2025
<b>Sampler</b>	: ----	<b>Issue Date</b>	: 25-Jun-2025 09:44
<b>Site</b>	: Town of Ladysmith		
<b>Quote number</b>	: Town of Ladysmith Standing Offer		
<b>No. of samples received</b>	: 4		
<b>No. of samples analysed</b>	: 4		

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This Certificate of Analysis contains the following information:

- General Comments
- 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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anita Chuang		Inorganics, Burnaby, British Columbia
Lindsay Gung		Microbiology, Burnaby, British Columbia
Miles Gropen		Inorganics, Burnaby, British Columbia



## General Comments

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CU	colour units (1 cu = 1 mg/l pt)
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µS/cm	microsiemens per centimetre

<: 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.



Work Order : VA25B4720  
Client : Town of Ladysmith  
Project : Arbutus Water Treatment Plant - Weekly Sampling

---





## Analytical Results

Sub-Matrix: Water  
 (Matrix: Water)

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Raw Water	DAF Effluent	UF Effluent	Treated Water (post reservoir)	----
Client sampling date / time					18-Jun-2025 10:30	18-Jun-2025 10:30	18-Jun-2025 10:30	18-Jun-2025 10:30	----	
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25B4720-001	VA25B4720-002	VA25B4720-003	VA25B4720-004	----	
					Result	Result	Result	Result	----	
Sample Preparation										
Dissolved carbon filtration location	----	EP358/VA	-	-	lab	lab	lab	----	----	
Physical Tests										
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L	----	----	----	11.6	----	
Colour, true	----	E329/VA	5.0	CU	----	----	----	<5.0	----	
Conductivity	----	E100/VA	2.0	µS/cm	----	----	----	56.9	----	
pH	----	E108/VA	0.10	pH units	----	----	----	7.26	----	
Turbidity	----	E121/VA	0.10	NTU	----	----	----	<0.10	----	
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L	1.97	0.78	0.96	----	----	
Carbon, total organic [TOC]	----	E355-L/VA	0.50	mg/L	2.09	1.19	0.79	----	----	
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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## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>VA25B4720</b>	Page	: 1 of 7
Client	: <b>Town of Ladysmith</b>	Laboratory	: ALS Environmental - Vancouver
Contact	: Shawn Baker	Account Manager	: Kevin Bhikadia
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	: 19-Jun-2025 12:00
PO	: 10940	Issue Date	: 25-Jun-2025 09:42
C-O-C number	: ----		
Sampler	: ----		
Site	: Town of Ladysmith		
Quote number	: Town of Ladysmith Standing Offer_V2		
No. of samples received	: 4		
No. of samples analysed	: 4		

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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 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

<b>Work Order</b>	: <b>VA25B5478</b>		
<b>Client</b>	: <b>Town of Ladysmith</b>	<b>Laboratory</b>	: ALS Environmental - Vancouver
<b>Contact</b>	: Shawn Baker	<b>Account Manager</b>	: Kevin Bhikadia
<b>Address</b>	: 410 Esplanade PO Box 220 Ladysmith British Columbia Canada V9G 1A2	<b>Address</b>	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
<b>Telephone</b>	: ----	<b>E-mail</b>	: Kevin.Bhikadia@alsglobal.com
<b>Project</b>	: Arbutus Water Treatment - Weekly Sampling	<b>Telephone</b>	: +1 604 253 4188
<b>PO</b>	: 10940	<b>Date Samples Received</b>	: 26-Jun-2025 11:08
<b>C-O-C number</b>	: ----	<b>Date Analysis Commenced</b>	: 26-Jun-2025
<b>Sampler</b>	: ----	<b>Issue Date</b>	: 03-Jul-2025 14:10
<b>Site</b>	: Town of Ladysmith		
<b>Quote number</b>	: Town of Ladysmith Standing Offer		
<b>No. of samples received</b>	: 4		
<b>No. of samples analysed</b>	: 4		

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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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anita Chuang		Inorganics, Burnaby, British Columbia
Miles Gropen		Microbiology, Burnaby, British Columbia
Monica Ko		Inorganics, Burnaby, British Columbia



## General Comments

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>: 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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UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Workorder Comments

**Sample(s) Treated Water: Exceeded Recommended Holding Time prior to receipt at the lab for Microbiology HPC analysis. Requested analysis will be conducted from the expired sample.**

Work Order : VA25B5478  
Client : Town of Ladysmith  
Project : Arbutus Water Treatment - Weekly Sampling

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## Analytical Results

Sub-Matrix: Water  
 (Matrix: Water)

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Raw Water	DAF Effluent	UF Effluent	Treated Water (post reservoir)	----
Client sampling date / time					25-Jun-2025 10:30	25-Jun-2025 10:30	25-Jun-2025 10:30	25-Jun-2025 10:30	----	
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25B5478-001	VA25B5478-002	VA25B5478-003	VA25B5478-004	----	
					Result	Result	Result	Result	----	
Sample Preparation										
Dissolved carbon filtration location	----	EP358/VA	-	-	lab	lab	lab	----	----	
Physical Tests										
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L	----	----	----	13.9	----	
Colour, true	----	E329/VA	5.0	CU	----	----	----	<5.0	----	
Conductivity	----	E100/VA	2.0	µS/cm	----	----	----	57.5	----	
pH	----	E108/VA	0.10	pH units	----	----	----	7.21	----	
Turbidity	----	E121/VA	0.10	NTU	----	----	----	<0.10	----	
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L	2.19	0.80	0.87	----	----	
Carbon, total organic [TOC]	----	E355-L/VA	0.50	mg/L	2.27	1.18	0.96	----	----	
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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## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>VA25B5478</b>	Page	: 1 of 8
Client	: <b>Town of Ladysmith</b>	Laboratory	: ALS Environmental - Vancouver
Contact	: Shawn Baker	Account Manager	: Kevin Bhikadia
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	: 26-Jun-2025 11:08
PO	: 10940	Issue Date	: 03-Jul-2025 14:10
C-O-C number	: ----		
Sampler	: ----		
Site	: Town of Ladysmith		
Quote number	: Town of Ladysmith Standing Offer_V2		
No. of samples received	: 4		
No. of samples analysed	: 4		

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### **Summary of Outliers**

#### **Outliers : Quality Control Samples**

- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Method Blank value 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.