

CERTIFICATE OF ANALYSIS

Work Order : **VA21B5266**
Client : **Lafarge Canada Inc.**
Contact : Stephanie Voysey
Address : 2300 Rogers Ave
 Coquitlam BC Canada V3K 5X6
Telephone : 604 349 9193
Project : Van Anda - Texada Island
PO : 4501487255
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : Q68488 - Texada Quarry Geochemistry
No. of samples received : 9
No. of samples analysed : 9

Page : 1 of 6
Laboratory : Vancouver - Environmental
Account Manager : Carla Fuginski
Address : 8081 Lougheed Highway
 Burnaby BC Canada V5A 1W9
Telephone : +1 604 253 4188
Date Samples Received : 23-Jul-2021 10:35
Date Analysis Commenced : 28-Jul-2021
Issue Date : 30-Jul-2021 13:57

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, 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).

<i>Unit</i>	<i>Description</i>
mg/L	milligrams 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.

Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



Analytical Results

Sub-Matrix: Water
 (Matrix: Water)

Client sample ID

					VA1- Site #1 Hotel	VA2- Site #2 Earl St	VA3- Site #3 Marble Bay @Van Anda	VA4 Site #4 Marble Bay @Sellentin	VA5- Site #5 Sellentin @Stuart Bay
Client sampling date / time					21-Jul-2021 14:50	21-Jul-2021 15:08	21-Jul-2021 15:30	21-Jul-2021 15:02	21-Jul-2021 14:56
Analyte	CAS Number	Method	LOR	Unit	VA21B5266-001	VA21B5266-002	VA21B5266-003	VA21B5266-004	VA21B5266-005
					Result	Result	Result	Result	Result
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0062	0.0071	0.0057	0.0060	0.0083
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00097	0.00098	0.00100	0.00099	0.00096
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00184	0.00184	0.00179	0.00193	0.00181
barium, total	7440-39-3	E420	0.00010	mg/L	0.00589	0.00602	0.00613	0.00611	0.00584
beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000100 ^{DLM}	<0.0000100 ^{DLM}	<0.0000100 ^{DLM}	<0.0000100 ^{DLM}
calcium, total	7440-70-2	E420	0.050	mg/L	35.4	34.8	36.6	34.7	34.4
cesium, total	7440-46-2	E420	0.000010	mg/L	0.000024	0.000027	0.000026	0.000025	0.000025
chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L	0.00836	0.00658	0.00557	0.00550	0.00550
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	0.099	0.010	<0.010	0.060
lead, total	7439-92-1	E420	0.000050	mg/L	0.000376	0.000923	0.000231	0.000586	0.000121
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.0050	mg/L	2.49	2.49	2.59	2.62	2.55
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00300	0.00257	0.00125	0.00152	0.00392
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00384	0.00387	0.00495	0.00434	0.00340
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
potassium, total	7440-09-7	E420	0.050	mg/L	0.306	0.311	0.317	0.321	0.302
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00036	0.00038	0.00040	0.00041	0.00041
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000441	0.000434	0.000459	0.000434	0.000483
silicon, total	7440-21-3	E420	0.10	mg/L	1.28	1.30	1.26	1.24	1.30
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	17341-25-2	E420	0.050	mg/L	4.91	4.79	5.11	5.32	5.07
strontium, total	7440-24-6	E420	0.00020	mg/L	0.140	0.143	0.145	0.145	0.140
sulfur, total	7704-34-9	E420	0.50	mg/L	13.2	12.9	12.7	13.2	12.5



Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Sub-Matrix: Water (Matrix: Water)					Client sample ID	VA1- Site #1 Hotel	VA2- Site #2 Earl St	VA3- Site #3 Marble Bay @Van Anda	VA4 Site #4 Marble Bay @Sellentin	VA5- Site #5 Sellentin @Stuart Bay
Client sampling date / time					21-Jul-2021 14:50	21-Jul-2021 15:08	21-Jul-2021 15:30	21-Jul-2021 15:02	21-Jul-2021 14:56	
Analyte	CAS Number	Method	LOR	Unit	VA21B5266-001	VA21B5266-002	VA21B5266-003	VA21B5266-004	VA21B5266-005	
					Result	Result	Result	Result	Result	
Total Metals										
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000182	0.000180	0.000199	0.000152	0.000168	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00090	0.00092	0.00090	0.00093	0.00092	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0087	0.0275	0.0060	0.0036	0.0066	
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	

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



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	VA6- Site #6 Wall St Pumphouse	VA7- Site #7 Copper Queen @Alladin	VA8- Site #8 Tank Outlet	VA-DUP- Site #3 Marble Bay @Van Anda	----
Client sampling date / time						21-Jul-2021 15:20	21-Jul-2021 15:15	21-Jul-2021 14:40	21-Jul-2021 15:30	----
Analyte	CAS Number	Method	LOR	Unit	VA21B5266-006	VA21B5266-007	VA21B5266-008	VA21B5266-009	-----	----
					Result	Result	Result	Result		----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0067	0.0114	0.0051	0.0177		----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00096	0.00096	0.00096	0.00137		----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00182	0.00183	0.00189	0.00194		----
barium, total	7440-39-3	E420	0.00010	mg/L	0.00590	0.00619	0.00600	0.00661		----
beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	<0.000020	<0.000020		----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	0.000130	<0.000050	<0.000050		----
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	<0.010	<0.010		----
cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000100 ^{DLM}	<0.0000050	<0.0000100 ^{DLM}	<0.0000100 ^{DLM}		----
calcium, total	7440-70-2	E420	0.050	mg/L	34.8	33.2	33.0	46.8		----
cesium, total	7440-46-2	E420	0.000010	mg/L	0.000026	0.000025	0.000025	0.000036		----
chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050		----
cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010		----
copper, total	7440-50-8	E420	0.00050	mg/L	0.00367	0.0102	0.00059	0.00460		----
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	0.075	<0.010	<0.010		----
lead, total	7439-92-1	E420	0.000050	mg/L	0.000126	0.00241	<0.000050	0.000077		----
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010		----
magnesium, total	7439-95-4	E420	0.0050	mg/L	2.52	2.58	2.55	2.84		----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00108	0.00657	0.00105	0.00114		----
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050		----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00417	0.00407	0.00514	0.00674		----
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050		----
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	<0.050	<0.050		----
potassium, total	7440-09-7	E420	0.050	mg/L	0.310	0.313	0.313	0.346		----
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00031	0.00044	0.00035	0.00043		----
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000520	0.000516	0.000422	0.000584		----
silicon, total	7440-21-3	E420	0.10	mg/L	1.30	1.33	1.24	1.47		----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010		----
sodium, total	17341-25-2	E420	0.050	mg/L	5.04	5.08	5.30	5.51		----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.142	0.143	0.143	0.208		----
sulfur, total	7704-34-9	E420	0.50	mg/L	12.9	13.4	13.2	15.2		----
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020		----



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	VA6- Site #6 Wall St Pumphouse	VA7- Site #7 Copper Queen @Alladin	VA8- Site #8 Tank Outlet	VA-DUP- Site #3 Marble Bay @Van Anda	----
Client sampling date / time						21-Jul-2021 15:20	21-Jul-2021 15:15	21-Jul-2021 14:40	21-Jul-2021 15:30	----
Analyte	CAS Number	Method	LOR	Unit	VA21B5266-006	VA21B5266-007	VA21B5266-008	VA21B5266-009	-----	
					Result	Result	Result	Result	----	
Total Metals										
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	----
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	----
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	----
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	----
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00107		----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000194	0.000196	0.000155	0.000258		----
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00088	0.00098	0.00086	0.00095		----
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0084	0.0072	<0.0030	0.0060		----
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020		----

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA21B5266	Page	: 1 of 6
Client	: Lafarge Canada Inc.	Laboratory	: Vancouver - Environmental
Contact	: Stephanie Voysey	Account Manager	: Carla Fuginski
Address	: 2300 Rogers Ave Coquitlam BC Canada V3K 5X6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 349 9193	Telephone	: +1 604 253 4188
Project	: Van Anda - Texada Island	Date Samples Received	: 23-Jul-2021 10:35
PO	: 4501487255	Issue Date	: 30-Jul-2021 13:57
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: Q68488 - Texada Quarry Geochemistry		
No. of samples received	: 9		
No. of samples analysed	: 9		

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 Services number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

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)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) VA1- Site #1 Hotel	E508	21-Jul-2021	----	----	----		29-Jul-2021	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) VA2- Site #2 Earl St	E508	21-Jul-2021	----	----	----		29-Jul-2021	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) VA3- Site #3 Marble Bay @Van Anda	E508	21-Jul-2021	----	----	----		29-Jul-2021	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) VA4 Site #4 Marble Bay @Sellentin	E508	21-Jul-2021	----	----	----		29-Jul-2021	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) VA5- Site #5 Sellentin @Stuart Bay	E508	21-Jul-2021	----	----	----		29-Jul-2021	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) VA6- Site #6 Wall St Pumphouse	E508	21-Jul-2021	----	----	----		29-Jul-2021	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) VA7- Site #7 Copper Queen @Alladin	E508	21-Jul-2021	----	----	----		29-Jul-2021	28 days	8 days	✓



Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) VA8- Site #8 Tank Outlet	E508	21-Jul-2021	----	----	----		29-Jul-2021	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) VA-DUP- Site #3 Marble Bay @Van Anda	E508	21-Jul-2021	----	----	----		29-Jul-2021	28 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) VA1- Site #1 Hotel	E420	21-Jul-2021	----	----	----		29-Jul-2021	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) VA2- Site #2 Earl St	E420	21-Jul-2021	----	----	----		29-Jul-2021	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) VA3- Site #3 Marble Bay @Van Anda	E420	21-Jul-2021	----	----	----		29-Jul-2021	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) VA4 Site #4 Marble Bay @Sellentin	E420	21-Jul-2021	----	----	----		29-Jul-2021	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) VA5- Site #5 Sellentin @Stuart Bay	E420	21-Jul-2021	----	----	----		29-Jul-2021	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) VA6- Site #6 Wall St Pumphouse	E420	21-Jul-2021	----	----	----		29-Jul-2021	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) VA7- Site #7 Copper Queen @Alladin	E420	21-Jul-2021	----	----	----		29-Jul-2021	180 days	8 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) VA8- Site #8 Tank Outlet	E420	21-Jul-2021	----	----	----		29-Jul-2021	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) VA-DUP- Site #3 Marble Bay @Van Anda	E420	21-Jul-2021	----	----	----		29-Jul-2021	180 days	8 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
Total Mercury in Water by CVAAS	E508	255088	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	253881	2	39	5.1	5.0	✔
Laboratory Control Samples (LCS)							
Total Mercury in Water by CVAAS	E508	255088	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	253881	2	39	5.1	5.0	✔
Method Blanks (MB)							
Total Mercury in Water by CVAAS	E508	255088	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	253881	2	39	5.1	5.0	✔
Matrix Spikes (MS)							
Total Mercury in Water by CVAAS	E508	255088	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	253881	2	39	5.1	5.0	✔



Methodology References and Summaries

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. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS



Environmental

QUALITY CONTROL REPORT

Work Order : **VA21B5266**

Page : 1 of 14

Client : Lafarge Canada Inc.
Contact : Stephanie Voysey
Address : 2300 Rogers Ave
Coquitlam BC Canada V3K 5X6
Telephone : 604 349 9193
Project : Van Anda - Texada Island
PO : 4501487255
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : Q68488 - Texada Quarry Geochemistry
No. of samples received : 9
No. of samples analysed : 9

Laboratory : Vancouver - Environmental
Account Manager : Carla Fuginski
Address : 8081 Lougheed Highway
Burnaby, British Columbia Canada V5A 1W9
Telephone : +1 604 253 4188
Date Samples Received : 23-Jul-2021 10:35
Date Analysis Commenced : 28-Jul-2021
Issue Date : 30-Jul-2021 13:57

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

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
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology 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 Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

= Indicates a QC result that did not meet the ALS DQO.



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 253881)											
VA21B5252-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.168	0.154	8.58%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.00267	0.00261	2.31%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	0.972	0.957	1.57%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00051	<0.00050	0.000008	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.080	0.077	0.003	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000286	0.000268	0.000018	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	0.242	0.231	4.78%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00248	0.00229	7.88%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000079	0.000074	0.000005	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.179	0.168	0.012	Diff <2x LOR	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00023	0.00024	0.000006	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	1.69	1.65	2.40%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	1.09	1.03	5.09%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.00590	0.00571	3.27%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 253881) - continued											
VA21B5252-001	Anonymous	tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00072	0.00076	0.00003	Diff <2x LOR	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000014	0.000014	0.0000002	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0074	0.0073	0.00009	Diff <2x LOR	----
		zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Total Metals (QC Lot: 253891)											
VA21B5246-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.599	0.612	2.10%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00272	0.00306	11.4%	20%	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00052	0.00052	0.000006	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0157	0.0159	1.33%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	0.00295	0.00306	3.45%	20%	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.061	0.062	0.0009	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.000303	0.000308	1.75%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	22.5	22.2	1.46%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	0.000095	0.000094	0.000001	Diff <2x LOR	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	0.00184	0.00186	0.00001	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00065	0.00067	0.00002	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.578	0.572	1.14%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	2.91	2.87	1.39%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.0181	0.0178	1.73%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0016	0.0016	0.000006	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	6.12	6.02	1.79%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.109	0.109	0.134%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00133	0.00144	8.13%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0120	0.0119	0.225%	20%	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	15.1	15.2	0.198%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	33.6	32.7	2.98%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.0275	0.0277	0.697%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.92	2.96	1.56%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	0.000115	0.000111	3.16%	20%	----
		sodium, total	17341-25-2	E420	0.050	mg/L	67.8	68.7	1.28%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0772	0.0780	1.08%	20%	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 253891) - continued											
VA21B5246-001	Anonymous	sulfur, total	7704-34-9	E420	0.50	mg/L	8.07	8.02	0.596%	20%	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	0.00293	0.00294	0.501%	20%	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000040	0.000040	0.0000002	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00076	0.00078	0.00002	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.306	0.306	0.0723%	20%	----
		zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00089	0.00090	0.000006	Diff <2x LOR	----
Total Metals (QC Lot: 255088)											
VA21B5257-003	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 253881)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 253881) - continued						
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 253891)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 253891) - continued						
tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 255088)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 253881)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	102	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	111	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	99.6	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	107	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	98.4	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	98.8	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	102	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	101	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.1	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	106	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	93.9	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	108	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	115	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	107	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	96.8	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	101	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	105	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	92.1	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	99.2	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	108	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	105	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	104	80.0	120	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 253881) - continued									
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	100	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	97.1	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
Total Metals (QCLot: 253891)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	99.5	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	96.7	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	97.2	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	93.4	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	108	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	96.2	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	97.4	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	97.2	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	98.1	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	98.8	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	98.8	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	101	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	103	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	88.0	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	100.0	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.5	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	116	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	106	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	91.2	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	100	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	109	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	89.2	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	100	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	103	80.0	120	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 253891) - continued									
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	95.8	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	96.1	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	91.6	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	98.5	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	99.9	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	94.5	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	99.6	80.0	120	----
Total Metals (QCLot: 255088)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	91.4	80.0	120	----



Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

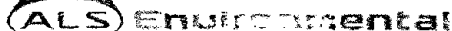
Sub-Matrix: Water					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 253881)										
VA21B5252-002	Anonymous	aluminum, total	7429-90-5	E420	0.218 mg/L	0.2 mg/L	109	70.0	130	----
		antimony, total	7440-36-0	E420	0.0197 mg/L	0.02 mg/L	98.3	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
		barium, total	7440-39-3	E420	0.0189 mg/L	0.02 mg/L	94.6	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0398 mg/L	0.04 mg/L	99.6	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00994 mg/L	0.01 mg/L	99.4	70.0	130	----
		boron, total	7440-42-8	E420	0.100 mg/L	0.1 mg/L	99.9	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00400 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, total	7440-70-2	E420	4.18 mg/L	4 mg/L	104	70.0	130	----
		cesium, total	7440-46-2	E420	0.00987 mg/L	0.01 mg/L	98.7	70.0	130	----
		chromium, total	7440-47-3	E420	0.0394 mg/L	0.04 mg/L	98.5	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0199 mg/L	0.02 mg/L	99.5	70.0	130	----
		copper, total	7440-50-8	E420	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		iron, total	7439-89-6	E420	2.04 mg/L	2 mg/L	102	70.0	130	----
		lead, total	7439-92-1	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		lithium, total	7439-93-2	E420	0.0963 mg/L	0.1 mg/L	96.3	70.0	130	----
		magnesium, total	7439-95-4	E420	1.01 mg/L	1 mg/L	101	70.0	130	----
		manganese, total	7439-96-5	E420	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, total	7440-02-0	E420	0.0396 mg/L	0.04 mg/L	98.9	70.0	130	----
		phosphorus, total	7723-14-0	E420	10.9 mg/L	10 mg/L	109	70.0	130	----
		potassium, total	7440-09-7	E420	4.09 mg/L	4 mg/L	102	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		selenium, total	7782-49-2	E420	0.0390 mg/L	0.04 mg/L	97.6	70.0	130	----
		silicon, total	7440-21-3	E420	9.34 mg/L	10 mg/L	93.4	70.0	130	----
		silver, total	7440-22-4	E420	0.00405 mg/L	0.004 mg/L	101	70.0	130	----
		sodium, total	17341-25-2	E420	2.26 mg/L	2 mg/L	113	70.0	130	----
		strontium, total	7440-24-6	E420	0.0231 mg/L	0.02 mg/L	116	70.0	130	----
		sulfur, total	7704-34-9	E420	19.3 mg/L	20 mg/L	96.4	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		thallium, total	7440-28-0	E420	0.00386 mg/L	0.004 mg/L	96.4	70.0	130	----
		thorium, total	7440-29-1	E420	0.0243 mg/L	0.02 mg/L	122	70.0	130	----



Sub-Matrix: Water					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	
Total Metals (QCLot: 253881) - continued										
VA21B5252-002	Anonymous	tin, total	7440-31-5	E420	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		titanium, total	7440-32-6	E420	0.0406 mg/L	0.04 mg/L	102	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		uranium, total	7440-61-1	E420	0.00400 mg/L	0.004 mg/L	100	70.0	130	----
		vanadium, total	7440-62-2	E420	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		zinc, total	7440-66-6	E420	0.387 mg/L	0.4 mg/L	96.8	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0426 mg/L	0.04 mg/L	106	70.0	130	----
Total Metals (QCLot: 253891)										
VA21B5246-002	Anonymous	aluminum, total	7429-90-5	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		antimony, total	7440-36-0	E420	0.0209 mg/L	0.02 mg/L	105	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0209 mg/L	0.02 mg/L	104	70.0	130	----
		barium, total	7440-39-3	E420	0.0191 mg/L	0.02 mg/L	95.5	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0111 mg/L	0.01 mg/L	111	70.0	130	----
		boron, total	7440-42-8	E420	0.108 mg/L	0.1 mg/L	108	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00404 mg/L	0.004 mg/L	101	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cesium, total	7440-46-2	E420	0.0101 mg/L	0.01 mg/L	101	70.0	130	----
		chromium, total	7440-47-3	E420	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		copper, total	7440-50-8	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, total	7439-89-6	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		lead, total	7439-92-1	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		lithium, total	7439-93-2	E420	0.0982 mg/L	0.1 mg/L	98.2	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0219 mg/L	0.02 mg/L	110	70.0	130	----
		nickel, total	7440-02-0	E420	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	----
		phosphorus, total	7723-14-0	E420	ND mg/L	10 mg/L	ND	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		rubidium, total	7440-17-7	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		silicon, total	7440-21-3	E420	9.76 mg/L	10 mg/L	97.6	70.0	130	----
		silver, total	7440-22-4	E420	0.00400 mg/L	0.004 mg/L	100	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----



Sub-Matrix: Water					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 253891) - continued										
VA21B5246-002	Anonymous	sulfur, total	7704-34-9	E420	21.3 mg/L	20 mg/L	106	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0421 mg/L	0.04 mg/L	105	70.0	130	----
		thallium, total	7440-28-0	E420	0.00390 mg/L	0.004 mg/L	97.6	70.0	130	----
		thorium, total	7440-29-1	E420	0.0218 mg/L	0.02 mg/L	109	70.0	130	----
		tin, total	7440-31-5	E420	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		titanium, total	7440-32-6	E420	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		uranium, total	7440-61-1	E420	0.00419 mg/L	0.004 mg/L	105	70.0	130	----
		vanadium, total	7440-62-2	E420	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		zinc, total	7440-66-6	E420	0.379 mg/L	0.4 mg/L	94.8	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0441 mg/L	0.04 mg/L	110	70.0	130	----
Total Metals (QCLot: 255088)										
VA21B5257-004	Anonymous	mercury, total	7439-97-6	E508	0.0000920 mg/L	0.0001 mg/L	92.0	70.0	130	----



Affix ALS barcode label here
(lab use only)

Page 1 of 1

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[illegible]

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

OCTOBER 2015 ETC

JULY 21/21

- ① VA-1 SITE #1 HOTEL 2:50 PM
7.83 PH
- ② VA-2 SITE #2 EARL ST 3:08 PM
7.83 PH
- ✓ ③ VA-3 SITE #3 MARBLE BAY @ VANANDA 3:30 PM
7.95 PH
- ④ VA-4 SITE #4 MARBLE BAY @ SELLENTIN 3:02 PM
7.84 PH
- ⑤ VA-5 SITE #5 SELLENTIN @ STURT BAY 2:56 PM
7.82 PH
- ⑥ VA-6 SITE #6 WALL ST PUMP HOUSE 3:20 PM
7.85 PH
- ⑦ VA-7 SITE #7 COPPER QUEEN @ ALLADIN 3:15 PM
7.86 PH
- ⑧ VA-8 SITE #8 TANIA OUTLET 2:40 PM
7.85 PH
- ⑨ VA-DUP SITE #3 MARBLE BAY @ VANANDA 3:30 PM
7.95 PH