

## Bottom Ash Data

2025 Week 44

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The following analytical report represents bottom ash composite results for week 44 of 2025 (October 26, 2025 to November 1, 2025).

The bottom ash meets the conditions of Metro Vancouver's 2020 Bottom Ash Management Plan and is suitable for disposal .

**CERTIFICATE OF ANALYSIS**

<b>Work Order</b>	: <b>VA25C9471</b>		
<b>Client</b>	: <b>Veolia Environmental Services Canada</b>	<b>Laboratory</b>	: ALS Environmental - Vancouver
<b>Contact</b>	: Brian Graham	<b>Account Manager</b>	: Gulraj Dhanaua
<b>Address</b>	: 5150 Riverbend Dr. Burnaby British Columbia Canada V3N 4V3	<b>Address</b>	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
<b>Telephone</b>	: ----	<b>E-mail</b>	: Gulraj.Dhanaua@alsglobal.com
<b>Project</b>	: Veolia Weekly Bottom Ash-Suite	<b>Telephone</b>	: +1 604 253 4188
<b>PO</b>	: 1000497676	<b>Date Samples Received</b>	: 04-Nov-2025 12:20
<b>C-O-C number</b>	: ----	<b>Date Analysis Commenced</b>	: 06-Nov-2025
<b>Sampler</b>	: ----	<b>Issue Date</b>	: 10-Nov-2025 09:21
<b>Site</b>	: Metro Van Ash Sampling Program		
<b>Quote number</b>	: VA25-VISI100-001		
<b>No. of samples received</b>	: 12		
<b>No. of samples analysed</b>	: 12		

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>
Dan Gebert	Supervisor - Metals Mercury & Speciation	Metals, Burnaby, British Columbia
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Kim Jensen	Department Manager - 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>
%	percent
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
pH units	pH units

<: 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: Soil  
 (Matrix: Soil/Solid)

					Client sample ID	BA 2544-A-1 ----	BA 2544-A-2 ----	BA 2544-A-3 ----	BA 2544-A-4 ----	BA 2544-A-5 ----
					Client sampling date / time	01-Nov-2025 12:00	01-Nov-2025 12:00	01-Nov-2025 12:00	01-Nov-2025 12:00	01-Nov-2025 12:00
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25C9471-001	VA25C9471-002	VA25C9471-003	VA25C9471-004	VA25C9471-005	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
Moisture	----	E144/VA	0.25	%	22.7	23.0	22.5	24.0	23.4	
pH (1:2 soil:water)	----	E108/VA	0.10	pH units	10.27	10.23	10.17	10.27	10.31	
<b>Metals</b>										
Aluminum	7429-90-5	E440/VA	50	mg/kg	44500	39000	41500	41800	44100	
Antimony	7440-36-0	E440/VA	0.10	mg/kg	112	117	445	122	114	
Arsenic	7440-38-2	E440/VA	0.10	mg/kg	11.8	13.6	27.8	11.3	11.6	
Barium	7440-39-3	E440/VA	0.50	mg/kg	590	640	540	467	478	
Beryllium	7440-41-7	E440/VA	0.10	mg/kg	0.37	0.39	0.38	0.37	0.36	
Bismuth	7440-69-9	E440/VA	0.20	mg/kg	11.7	17.7	20.5	9.85	12.8	
Boron	7440-42-8	E440/VA	5.0	mg/kg	201	173	164	169	169	
Cadmium	7440-43-9	E440/VA	0.020	mg/kg	8.12	40.9	7.17	8.85	7.13	
Calcium	7440-70-2	E440/VA	50	mg/kg	136000	130000	128000	138000	137000	
Chromium	7440-47-3	E440/VA	0.50	mg/kg	197	183	312	174	169	
Cobalt	7440-48-4	E440/VA	0.10	mg/kg	104	114	92.1	89.7	96.3	
Copper	7440-50-8	E440/VA	0.50	mg/kg	5650	1960	5350	5520	19400	
Iron	7439-89-6	E440/VA	50	mg/kg	59000	75600	75600	58100	57600	
Lead	7439-92-1	E440/VA	0.50	mg/kg	244	286	11800	361	450	
Lithium	7439-93-2	E440/VA	2.0	mg/kg	40.8	49.5	39.5	37.6	35.6	
Magnesium	7439-95-4	E440/VA	20	mg/kg	12300	12700	11600	14600	13400	
Manganese	7439-96-5	E440/VA	1.0	mg/kg	1030	1070	1170	963	1020	
Mercury	7439-97-6	E510/VA	0.0500	mg/kg	<0.0500	<0.0500	<0.0500	0.0571	<0.0500	



## Analytical Results

Sub-Matrix: Soil  
 (Matrix: Soil/Solid)

					Client sample ID	BA 2544-A-1	BA 2544-A-2	BA 2544-A-3	BA 2544-A-4	BA 2544-A-5
					Client sampling date / time	01-Nov-2025 12:00	01-Nov-2025 12:00	01-Nov-2025 12:00	01-Nov-2025 12:00	01-Nov-2025 12:00
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25C9471-001	VA25C9471-002	VA25C9471-003	VA25C9471-004	VA25C9471-005	
					Result	Result	Result	Result	Result	
<b>Metals</b>										
Molybdenum	7439-98-7	E440/VA	0.10	mg/kg	21.7	27.5	22.1	22.1	23.5	
Nickel	7440-02-0	E440/VA	0.50	mg/kg	378	388	407	488	375	
Phosphorus	7723-14-0	E440/VA	50	mg/kg	12000	12400	13100	13300	12700	
Potassium	7440-09-7	E440/VA	100	mg/kg	5540	5750	5110	6280	5340	
Selenium	7782-49-2	E440/VA	0.20	mg/kg	0.37	0.41	0.39	0.44	0.35	
Silver	7440-22-4	E440/VA	0.10	mg/kg	9.16	10.2	12.6	5.49	11.6	
Sodium	7440-23-5	E440/VA	50	mg/kg	16600	17600	15200	18900	16200	
Strontium	7440-24-6	E440/VA	0.50	mg/kg	329	324	306	362	306	
Sulfur	7704-34-9	E440/VA	1000	mg/kg	10400	10900	9900	11100	11300	
Thallium	7440-28-0	E440/VA	0.050	mg/kg	<0.050	<0.050	0.052	<0.050	<0.050	
Tin	7440-31-5	E440/VA	2.0	mg/kg	98.7	122	451	123	118	
Titanium	7440-32-6	E440/VA	1.0	mg/kg	323	386	318	332	286	
Tungsten	7440-33-7	E440/VA	0.50	mg/kg	16.9	10.7	12.0	14.1	10.8	
Uranium	7440-61-1	E440/VA	0.050	mg/kg	1.79	1.68	1.80	1.67	1.67	
Vanadium	7440-62-2	E440/VA	0.20	mg/kg	28.2	28.1	28.9	28.7	28.6	
Zinc	7440-66-6	E440/VA	2.0	mg/kg	4210	4170	4170	4330	4430	
Zirconium	7440-67-7	E440/VA	1.0	mg/kg	1.9	2.5	2.2	2.7	2.9	
<b>TCLP Metals</b>										
pH, TCLP 1st preliminary	----	EPP444/VA	0.010	pH units	11.08	11.11	11.15	11.18	11.18	
pH, TCLP 2nd preliminary	----	EPP444/VA	0.010	pH units	2.87	2.44	2.29	2.29	2.39	
pH, TCLP extraction fluid initial	----	EPP444/VA	0.010	pH units	4.97	4.97	4.97	4.97	4.97	



## Analytical Results

Sub-Matrix: Soil  
 (Matrix: Soil/Solid)

					Client sample ID	BA 2544-A-1	BA 2544-A-2	BA 2544-A-3	BA 2544-A-4	BA 2544-A-5
					Client sampling date / time	01-Nov-2025 12:00	01-Nov-2025 12:00	01-Nov-2025 12:00	01-Nov-2025 12:00	01-Nov-2025 12:00
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25C9471-001	VA25C9471-002	VA25C9471-003	VA25C9471-004	VA25C9471-005	
					Result	Result	Result	Result	Result	
<b>TCLP Metals</b>										
pH, TCLP final	----	EPP444/VA	0.010	pH units	9.25	9.21	9.14	9.15	9.27	
Antimony, TCLP	7440-36-0	E444/VA	1.00	mg/L	<1.00	<1.00	<1.00	<1.00	<1.00	
Arsenic, TCLP	7440-38-2	E444/VA	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Barium, TCLP	7440-39-3	E444/VA	2.5	mg/L	<2.5	<2.5	<2.5	<2.5	<2.5	
Beryllium, TCLP	7440-41-7	E444/VA	0.025	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	
Boron, TCLP	7440-42-8	E444/VA	0.50	mg/L	0.90	0.87	1.21	0.88	0.90	
Cadmium, TCLP	7440-43-9	E444/VA	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
Calcium, TCLP	7440-70-2	E444/VA	10	mg/L	783	787	813	823	784	
Chromium, TCLP	7440-47-3	E444/VA	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25	
Cobalt, TCLP	7440-48-4	E444/VA	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
Copper, TCLP	7440-50-8	E444/VA	0.050	mg/L	0.574	0.525	0.552	0.538	0.549	
Iron, TCLP	7439-89-6	E444/VA	5.0	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	
Lead, TCLP	7439-92-1	E444/VA	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25	
Magnesium, TCLP	7439-95-4	E444/VA	2.5	mg/L	9.5	10.8	11.9	14.0	11.1	
Mercury, TCLP	7439-97-6	E512/VA	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Nickel, TCLP	7440-02-0	E444/VA	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25	
Selenium, TCLP	7782-49-2	E444/VA	0.10	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	
Silver, TCLP	7440-22-4	E444/VA	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
Thallium, TCLP	7440-28-0	E444/VA	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Uranium, TCLP	7440-61-1	E444/VA	0.20	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	
Vanadium, TCLP	7440-62-2	E444/VA	0.15	mg/L	<0.15	<0.15	<0.15	<0.15	<0.15	



### Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA 2544-A-1 ----	BA 2544-A-2 ----	BA 2544-A-3 ----	BA 2544-A-4 ----	BA 2544-A-5 ----
					Client sampling date / time	01-Nov-2025 12:00	01-Nov-2025 12:00	01-Nov-2025 12:00	01-Nov-2025 12:00	01-Nov-2025 12:00
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25C9471-001	VA25C9471-002	VA25C9471-003	VA25C9471-004	VA25C9471-005	
					Result	Result	Result	Result	Result	
<b>TCLP Metals</b>										
Zinc, TCLP	7440-66-6	E444/VA	0.50	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
Zirconium, TCLP	7440-67-7	E444/VA	10	mg/L	<10	<10	<10	<10	<10	

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

### Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA 2544-A-6 ----	BA 2544-A-7 ----	BA 2544-A-8 ----	BA 2544-A-9 ----	BA 2544-A-10 ----
					Client sampling date / time	01-Nov-2025 12:00	01-Nov-2025 12:00	01-Nov-2025 12:00	01-Nov-2025 12:00	01-Nov-2025 12:00
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25C9471-006	VA25C9471-007	VA25C9471-008	VA25C9471-009	VA25C9471-010	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
Moisture	----	E144/VA	0.25	%	21.2	23.7	21.3	22.2	20.5	
pH (1:2 soil:water)	----	E108/VA	0.10	pH units	10.33	10.20	10.22	10.28	10.27	
<b>Metals</b>										
Aluminum	7429-90-5	E440/VA	50	mg/kg	40100	41700	45200	33200	47700	
Antimony	7440-36-0	E440/VA	0.10	mg/kg	109	109	112	106	115	
Arsenic	7440-38-2	E440/VA	0.10	mg/kg	9.57	11.4	10.3	17.7	9.02	
Barium	7440-39-3	E440/VA	0.50	mg/kg	586	573	612	665	659	
Beryllium	7440-41-7	E440/VA	0.10	mg/kg	0.43	0.37	0.36	0.34	0.35	
Bismuth	7440-69-9	E440/VA	0.20	mg/kg	16.0	8.46	12.2	6.90	8.71	
Boron	7440-42-8	E440/VA	5.0	mg/kg	208	171	170	214	164	
Cadmium	7440-43-9	E440/VA	0.020	mg/kg	8.29	8.48	8.42	6.64	7.80	
Calcium	7440-70-2	E440/VA	50	mg/kg	127000	134000	137000	120000	126000	



## Analytical Results

Sub-Matrix: Soil  
 (Matrix: Soil/Solid)

					Client sample ID	BA 2544-A-6	BA 2544-A-7	BA 2544-A-8	BA 2544-A-9	BA 2544-A-10
					Client sampling date / time	01-Nov-2025 12:00	01-Nov-2025 12:00	01-Nov-2025 12:00	01-Nov-2025 12:00	01-Nov-2025 12:00
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25C9471-006	VA25C9471-007	VA25C9471-008	VA25C9471-009	VA25C9471-010	
					Result	Result	Result	Result	Result	
<b>Metals</b>										
Chromium	7440-47-3	E440/VA	0.50	mg/kg	303	195	161	218	231	
Cobalt	7440-48-4	E440/VA	0.10	mg/kg	80.1	88.8	69.1	54.1	63.6	
Copper	7440-50-8	E440/VA	0.50	mg/kg	17700	2670	2810	1810	8940	
Iron	7439-89-6	E440/VA	50	mg/kg	85100	61200	77800	80500	89400	
Lead	7439-92-1	E440/VA	0.50	mg/kg	289	263	466	258	235	
Lithium	7439-93-2	E440/VA	2.0	mg/kg	34.0	34.0	37.5	33.3	46.1	
Magnesium	7439-95-4	E440/VA	20	mg/kg	11600	13900	12100	11700	12400	
Manganese	7439-96-5	E440/VA	1.0	mg/kg	1380	1060	1500	1020	1170	
Mercury	7439-97-6	E510/VA	0.0500	mg/kg	<0.0500	0.0752	<0.0500	<0.0500	<0.0500	
Molybdenum	7439-98-7	E440/VA	0.10	mg/kg	22.5	19.9	22.4	18.8	25.5	
Nickel	7440-02-0	E440/VA	0.50	mg/kg	641	409	356	331	397	
Phosphorus	7723-14-0	E440/VA	50	mg/kg	11400	12000	12800	10900	10700	
Potassium	7440-09-7	E440/VA	100	mg/kg	4700	5700	5510	4470	5350	
Selenium	7782-49-2	E440/VA	0.20	mg/kg	0.40	0.47	0.44	0.39	0.39	
Silver	7440-22-4	E440/VA	0.10	mg/kg	6.02	5.73	6.87	3.92	6.70	
Sodium	7440-23-5	E440/VA	50	mg/kg	15100	16500	16500	14100	16300	
Strontium	7440-24-6	E440/VA	0.50	mg/kg	585	436	320	277	316	
Sulfur	7704-34-9	E440/VA	1000	mg/kg	9500	11400	11200	9100	10000	
Thallium	7440-28-0	E440/VA	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	
Tin	7440-31-5	E440/VA	2.0	mg/kg	473	125	510	107	749	
Titanium	7440-32-6	E440/VA	1.0	mg/kg	360	263	330	248	367	



## Analytical Results

Sub-Matrix: Soil  
 (Matrix: Soil/Solid)

					Client sample ID	BA 2544-A-6	BA 2544-A-7	BA 2544-A-8	BA 2544-A-9	BA 2544-A-10
					Client sampling date / time	01-Nov-2025 12:00	01-Nov-2025 12:00	01-Nov-2025 12:00	01-Nov-2025 12:00	01-Nov-2025 12:00
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25C9471-006	VA25C9471-007	VA25C9471-008	VA25C9471-009	VA25C9471-010	
					Result	Result	Result	Result	Result	
<b>Metals</b>										
Tungsten	7440-33-7	E440/VA	0.50	mg/kg	11.2	11.4	10.8	11.4	9.82	
Uranium	7440-61-1	E440/VA	0.050	mg/kg	1.58	1.63	1.60	1.39	1.68	
Vanadium	7440-62-2	E440/VA	0.20	mg/kg	32.2	30.4	28.9	36.0	30.1	
Zinc	7440-66-6	E440/VA	2.0	mg/kg	3710	3310	4640	3670	3320	
Zirconium	7440-67-7	E440/VA	1.0	mg/kg	3.2	2.7	3.1	2.4	3.4	
<b>TCLP Metals</b>										
pH, TCLP 1st preliminary	---	EPP444/VA	0.010	pH units	11.12	11.12	11.13	11.15	11.16	
pH, TCLP 2nd preliminary	---	EPP444/VA	0.010	pH units	2.93	2.49	2.45	3.49	3.10	
pH, TCLP extraction fluid initial	---	EPP444/VA	0.010	pH units	4.97	4.93	4.93	4.93	4.93	
pH, TCLP final	---	EPP444/VA	0.010	pH units	9.23	9.08	9.30	9.28	9.32	
Antimony, TCLP	7440-36-0	E444/VA	1.00	mg/L	<1.00	<1.00	<1.00	<1.00	<1.00	
Arsenic, TCLP	7440-38-2	E444/VA	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Barium, TCLP	7440-39-3	E444/VA	2.5	mg/L	<2.5	<2.5	<2.5	<2.5	<2.5	
Beryllium, TCLP	7440-41-7	E444/VA	0.025	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	
Boron, TCLP	7440-42-8	E444/VA	0.50	mg/L	0.97	0.87	0.88	0.93	0.94	
Cadmium, TCLP	7440-43-9	E444/VA	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
Calcium, TCLP	7440-70-2	E444/VA	10	mg/L	760	794	812	805	824	
Chromium, TCLP	7440-47-3	E444/VA	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25	
Cobalt, TCLP	7440-48-4	E444/VA	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
Copper, TCLP	7440-50-8	E444/VA	0.050	mg/L	0.508	0.593	0.575	0.546	0.585	
Iron, TCLP	7439-89-6	E444/VA	5.0	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	



### Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID				
					BA 2544-A-6 ----	BA 2544-A-7 ----	BA 2544-A-8 ----	BA 2544-A-9 ----	BA 2544-A-10 ----
					Client sampling date / time				
					01-Nov-2025 12:00	01-Nov-2025 12:00	01-Nov-2025 12:00	01-Nov-2025 12:00	01-Nov-2025 12:00
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25C9471-006	VA25C9471-007	VA25C9471-008	VA25C9471-009	VA25C9471-010
					Result	Result	Result	Result	Result
<b>TCLP Metals</b>									
Lead, TCLP	7439-92-1	E444/VA	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25
Magnesium, TCLP	7439-95-4	E444/VA	2.5	mg/L	11.5	10.0	11.6	11.8	11.1
Mercury, TCLP	7439-97-6	E512/VA	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Nickel, TCLP	7440-02-0	E444/VA	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25
Selenium, TCLP	7782-49-2	E444/VA	0.10	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Silver, TCLP	7440-22-4	E444/VA	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
Thallium, TCLP	7440-28-0	E444/VA	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Uranium, TCLP	7440-61-1	E444/VA	0.20	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Vanadium, TCLP	7440-62-2	E444/VA	0.15	mg/L	<0.15	<0.15	<0.15	<0.15	<0.15
Zinc, TCLP	7440-66-6	E444/VA	0.50	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Zirconium, TCLP	7440-67-7	E444/VA	10	mg/L	<10	<10	<10	<10	<10

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

### Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID				
					BA 2544-A-11 ----	BA 2544-A-12 ----	----	----	----
					Client sampling date / time				
					01-Nov-2025 12:00	01-Nov-2025 12:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25C9471-011	VA25C9471-012	----	----	----
					Result	Result	----	----	----
<b>Physical Tests</b>									
Moisture	----	E144/VA	0.25	%	22.3	21.7	----	----	----
pH (1:2 soil:water)	----	E108/VA	0.10	pH units	10.26	10.23	----	----	----



## Analytical Results

Sub-Matrix: Soil  
 (Matrix: Soil/Solid)

					Client sample ID	BA 2544-A-11	BA 2544-A-12	----	----	----
					Client sampling date / time	01-Nov-2025 12:00	01-Nov-2025 12:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25C9471-011	VA25C9471-012	----	----	----	
					Result	Result	----	----	----	
<b>Metals</b>										
Aluminum	7429-90-5	E440/VA	50	mg/kg	52600	39300	----	----	----	
Antimony	7440-36-0	E440/VA	0.10	mg/kg	98.9	114	----	----	----	
Arsenic	7440-38-2	E440/VA	0.10	mg/kg	9.71	11.5	----	----	----	
Barium	7440-39-3	E440/VA	0.50	mg/kg	595	571	----	----	----	
Beryllium	7440-41-7	E440/VA	0.10	mg/kg	0.34	0.35	----	----	----	
Bismuth	7440-69-9	E440/VA	0.20	mg/kg	8.81	10.7	----	----	----	
Boron	7440-42-8	E440/VA	5.0	mg/kg	215	176	----	----	----	
Cadmium	7440-43-9	E440/VA	0.020	mg/kg	11.5	8.17	----	----	----	
Calcium	7440-70-2	E440/VA	50	mg/kg	131000	132000	----	----	----	
Chromium	7440-47-3	E440/VA	0.50	mg/kg	203	187	----	----	----	
Cobalt	7440-48-4	E440/VA	0.10	mg/kg	230	138	----	----	----	
Copper	7440-50-8	E440/VA	0.50	mg/kg	3450	2460	----	----	----	
Iron	7439-89-6	E440/VA	50	mg/kg	58400	66700	----	----	----	
Lead	7439-92-1	E440/VA	0.50	mg/kg	1130	941	----	----	----	
Lithium	7439-93-2	E440/VA	2.0	mg/kg	39.2	35.3	----	----	----	
Magnesium	7439-95-4	E440/VA	20	mg/kg	12200	11700	----	----	----	
Manganese	7439-96-5	E440/VA	1.0	mg/kg	1120	899	----	----	----	
Mercury	7439-97-6	E510/VA	0.0500	mg/kg	<0.0500	<0.0500	----	----	----	
Molybdenum	7439-98-7	E440/VA	0.10	mg/kg	18.6	21.9	----	----	----	
Nickel	7440-02-0	E440/VA	0.50	mg/kg	460	460	----	----	----	
Phosphorus	7723-14-0	E440/VA	50	mg/kg	11900	12800	----	----	----	



## Analytical Results

Sub-Matrix: Soil  
 (Matrix: Soil/Solid)

					Client sample ID	BA 2544-A-11	BA 2544-A-12	----	----	----
					Client sampling date / time	01-Nov-2025 12:00	01-Nov-2025 12:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25C9471-011	VA25C9471-012	----	----	----	
					Result	Result	----	----	----	
<b>Metals</b>										
Potassium	7440-09-7	E440/VA	100	mg/kg	5420	5640	----	----	----	
Selenium	7782-49-2	E440/VA	0.20	mg/kg	0.38	0.46	----	----	----	
Silver	7440-22-4	E440/VA	0.10	mg/kg	4.89	7.27	----	----	----	
Sodium	7440-23-5	E440/VA	50	mg/kg	16300	17500	----	----	----	
Strontium	7440-24-6	E440/VA	0.50	mg/kg	287	401	----	----	----	
Sulfur	7704-34-9	E440/VA	1000	mg/kg	9100	10700	----	----	----	
Thallium	7440-28-0	E440/VA	0.050	mg/kg	<0.050	<0.050	----	----	----	
Tin	7440-31-5	E440/VA	2.0	mg/kg	115	155	----	----	----	
Titanium	7440-32-6	E440/VA	1.0	mg/kg	357	324	----	----	----	
Tungsten	7440-33-7	E440/VA	0.50	mg/kg	9.63	9.59	----	----	----	
Uranium	7440-61-1	E440/VA	0.050	mg/kg	1.56	1.70	----	----	----	
Vanadium	7440-62-2	E440/VA	0.20	mg/kg	29.2	28.4	----	----	----	
Zinc	7440-66-6	E440/VA	2.0	mg/kg	3300	4410	----	----	----	
Zirconium	7440-67-7	E440/VA	1.0	mg/kg	3.3	3.2	----	----	----	
<b>TCLP Metals</b>										
pH, TCLP 1st preliminary	----	EPP444/VA	0.010	pH units	11.16	11.15	----	----	----	
pH, TCLP 2nd preliminary	----	EPP444/VA	0.010	pH units	3.47	3.24	----	----	----	
pH, TCLP extraction fluid initial	----	EPP444/VA	0.010	pH units	4.93	4.93	----	----	----	
pH, TCLP final	----	EPP444/VA	0.010	pH units	9.35	9.25	----	----	----	
Antimony, TCLP	7440-36-0	E444/VA	1.00	mg/L	<1.00	<1.00	----	----	----	
Arsenic, TCLP	7440-38-2	E444/VA	1.0	mg/L	<1.0	<1.0	----	----	----	



**Analytical Results**

Sub-Matrix: Soil  
 (Matrix: Soil/Solid)

					Client sample ID	BA 2544-A-11	BA 2544-A-12	----	----	----
					Client sampling date / time	01-Nov-2025 12:00	01-Nov-2025 12:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25C9471-011	VA25C9471-012	----	----	----	----
					Result	Result	----	----	----	----
<b>TCLP Metals</b>										
Barium, TCLP	7440-39-3	E444/VA	2.5	mg/L	<2.5	<2.5	----	----	----	----
Beryllium, TCLP	7440-41-7	E444/VA	0.025	mg/L	<0.025	<0.025	----	----	----	----
Boron, TCLP	7440-42-8	E444/VA	0.50	mg/L	0.85	0.89	----	----	----	----
Cadmium, TCLP	7440-43-9	E444/VA	0.050	mg/L	<0.050	<0.050	----	----	----	----
Calcium, TCLP	7440-70-2	E444/VA	10	mg/L	821	839	----	----	----	----
Chromium, TCLP	7440-47-3	E444/VA	0.25	mg/L	<0.25	<0.25	----	----	----	----
Cobalt, TCLP	7440-48-4	E444/VA	0.050	mg/L	<0.050	<0.050	----	----	----	----
Copper, TCLP	7440-50-8	E444/VA	0.050	mg/L	0.603	0.556	----	----	----	----
Iron, TCLP	7439-89-6	E444/VA	5.0	mg/L	<5.0	<5.0	----	----	----	----
Lead, TCLP	7439-92-1	E444/VA	0.25	mg/L	<0.25	<0.25	----	----	----	----
Magnesium, TCLP	7439-95-4	E444/VA	2.5	mg/L	10.2	12.0	----	----	----	----
Mercury, TCLP	7439-97-6	E512/VA	0.0010	mg/L	<0.0010	<0.0010	----	----	----	----
Nickel, TCLP	7440-02-0	E444/VA	0.25	mg/L	<0.25	<0.25	----	----	----	----
Selenium, TCLP	7782-49-2	E444/VA	0.10	mg/L	<0.10	<0.10	----	----	----	----
Silver, TCLP	7440-22-4	E444/VA	0.050	mg/L	<0.050	<0.050	----	----	----	----
Thallium, TCLP	7440-28-0	E444/VA	1.0	mg/L	<1.0	<1.0	----	----	----	----
Uranium, TCLP	7440-61-1	E444/VA	0.20	mg/L	<0.20	<0.20	----	----	----	----
Vanadium, TCLP	7440-62-2	E444/VA	0.15	mg/L	<0.15	<0.15	----	----	----	----
Zinc, TCLP	7440-66-6	E444/VA	0.50	mg/L	<0.50	<0.50	----	----	----	----
Zirconium, TCLP	7440-67-7	E444/VA	10	mg/L	<10	<10	----	----	----	----

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



## QUALITY CONTROL INTERPRETIVE REPORT

<p><b>Work Order</b> : <b>VA25C9471</b></p> <p><b>Client</b> : <b>Veolia Environmental Services Canada</b></p> <p><b>Contact</b> : Brian Graham</p> <p><b>Address</b> : 5150 Riverbend Dr. Burnaby BC Canada V3N 4V3</p> <p><b>Telephone</b> : ----</p> <p><b>Project</b> : Veolia Weekly Bottom Ash-Suite</p> <p><b>PO</b> : 1000497676</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : ----</p> <p><b>Site</b> : Metro Van Ash Sampling Program</p> <p><b>Quote number</b> : VA25-VIS1100-001</p> <p><b>No. of samples received</b> : 12</p> <p><b>No. of samples analysed</b> : 12</p>	<p><b>Page</b> : 1 of 16</p> <p><b>Laboratory</b> : ALS Environmental - Vancouver</p> <p><b>Account Manager</b> : Gulraj Dhanaua</p> <p><b>Address</b> : 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9</p> <p><b>Telephone</b> : +1 604 253 4188</p> <p><b>Date Samples Received</b> : 04-Nov-2025 12:20</p> <p><b>Issue Date</b> : 10-Nov-2025 09:21</p>
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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 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)***

- No Analysis Holding Time Outliers exist.

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

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: Soil/Solid

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Duplicate (DUP) RPDs</b>								
Metals	VA25C9471-001	BA 2544-A-1	Antimony	7440-36-0	E440	127 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA25C9471-001	BA 2544-A-1	Arsenic	7440-38-2	E440	41.4 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA25C9471-001	BA 2544-A-1	Bismuth	7440-69-9	E440	36.1 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA25C9471-001	BA 2544-A-1	Cobalt	7440-48-4	E440	77.6 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA25C9471-001	BA 2544-A-1	Copper	7440-50-8	E440	81.1 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA25C9471-001	BA 2544-A-1	Lead	7439-92-1	E440	118 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.
Metals	VA25C9471-001	BA 2544-A-1	Nickel	7440-02-0	E440	38.3 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA25C9471-001	BA 2544-A-1	Silver	7440-22-4	E440	53.2 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.
Metals	VA25C9471-001	BA 2544-A-1	Tin	7440-31-5	E440	197 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.
Metals	VA25C9471-001	BA 2544-A-1	Titanium	7440-32-6	E440	44.4 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.
Metals	VA25C9471-001	BA 2544-A-1	Tungsten	7440-33-7	E440	42.0 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA25C9471-001	BA 2544-A-1	Zirconium	7440-67-7	E440	2.3 % DUP-H, J	Diff <2x LOR	Low Level DUP DQO exceeded (difference > 2 LOR).

**Result Qualifiers**

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
J	Duplicate results and limits are expressed in terms of absolute difference.



## 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: **Soil/Solid**

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

Analyte Group : Analytical Method 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		
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
<b>LDPE bag</b> BA 2544-A-1	E510	01-Nov-2025	08-Nov-2025	28 days	7 days	✔	08-Nov-2025	28 days	0 days	✔	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
<b>LDPE bag</b> BA 2544-A-10	E510	01-Nov-2025	08-Nov-2025	28 days	7 days	✔	08-Nov-2025	28 days	0 days	✔	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
<b>LDPE bag</b> BA 2544-A-11	E510	01-Nov-2025	08-Nov-2025	28 days	7 days	✔	08-Nov-2025	28 days	0 days	✔	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
<b>LDPE bag</b> BA 2544-A-12	E510	01-Nov-2025	08-Nov-2025	28 days	7 days	✔	08-Nov-2025	28 days	0 days	✔	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
<b>LDPE bag</b> BA 2544-A-2	E510	01-Nov-2025	08-Nov-2025	28 days	7 days	✔	08-Nov-2025	28 days	0 days	✔	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
<b>LDPE bag</b> BA 2544-A-3	E510	01-Nov-2025	08-Nov-2025	28 days	7 days	✔	08-Nov-2025	28 days	0 days	✔	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
<b>LDPE bag</b> BA 2544-A-4	E510	01-Nov-2025	08-Nov-2025	28 days	7 days	✔	08-Nov-2025	28 days	0 days	✔	



Matrix: Soil/Solid

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

Analyte Group : Analytical Method 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		
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
<b>LDPE bag</b> BA 2544-A-5	E510	01-Nov-2025	08-Nov-2025	28 days	7 days	✔	08-Nov-2025	28 days	0 days	✔	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
<b>LDPE bag</b> BA 2544-A-6	E510	01-Nov-2025	08-Nov-2025	28 days	7 days	✔	08-Nov-2025	28 days	0 days	✔	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
<b>LDPE bag</b> BA 2544-A-7	E510	01-Nov-2025	08-Nov-2025	28 days	7 days	✔	08-Nov-2025	28 days	0 days	✔	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
<b>LDPE bag</b> BA 2544-A-8	E510	01-Nov-2025	08-Nov-2025	28 days	7 days	✔	08-Nov-2025	28 days	0 days	✔	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
<b>LDPE bag</b> BA 2544-A-9	E510	01-Nov-2025	08-Nov-2025	28 days	7 days	✔	08-Nov-2025	28 days	0 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
<b>LDPE bag</b> BA 2544-A-1	E440	01-Nov-2025	08-Nov-2025	180 days	7 days	✔	09-Nov-2025	180 days	7 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
<b>LDPE bag</b> BA 2544-A-10	E440	01-Nov-2025	08-Nov-2025	180 days	7 days	✔	09-Nov-2025	180 days	7 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
<b>LDPE bag</b> BA 2544-A-11	E440	01-Nov-2025	08-Nov-2025	180 days	7 days	✔	09-Nov-2025	180 days	7 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
<b>LDPE bag</b> BA 2544-A-12	E440	01-Nov-2025	08-Nov-2025	180 days	7 days	✔	09-Nov-2025	180 days	7 days	✔	



Matrix: Soil/Solid

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

Analyte Group : Analytical Method 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		
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
<b>LDPE bag</b> BA 2544-A-2	E440	01-Nov-2025	08-Nov-2025	180 days	7 days	✔	09-Nov-2025	180 days	7 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
<b>LDPE bag</b> BA 2544-A-3	E440	01-Nov-2025	08-Nov-2025	180 days	7 days	✔	09-Nov-2025	180 days	7 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
<b>LDPE bag</b> BA 2544-A-4	E440	01-Nov-2025	08-Nov-2025	180 days	7 days	✔	09-Nov-2025	180 days	7 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
<b>LDPE bag</b> BA 2544-A-5	E440	01-Nov-2025	08-Nov-2025	180 days	7 days	✔	09-Nov-2025	180 days	7 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
<b>LDPE bag</b> BA 2544-A-6	E440	01-Nov-2025	08-Nov-2025	180 days	7 days	✔	09-Nov-2025	180 days	7 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
<b>LDPE bag</b> BA 2544-A-7	E440	01-Nov-2025	08-Nov-2025	180 days	7 days	✔	09-Nov-2025	180 days	7 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
<b>LDPE bag</b> BA 2544-A-8	E440	01-Nov-2025	08-Nov-2025	180 days	7 days	✔	09-Nov-2025	180 days	7 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
<b>LDPE bag</b> BA 2544-A-9	E440	01-Nov-2025	08-Nov-2025	180 days	7 days	✔	09-Nov-2025	180 days	7 days	✔	
<b>Physical Tests : Moisture Content by Gravimetry</b>											
<b>LDPE bag</b> BA 2544-A-1	E144	01-Nov-2025	----	----	----		07-Nov-2025	----	----		



Matrix: Soil/Solid

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

Analyte Group : Analytical Method 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	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA 2544-A-10	E144	01-Nov-2025	----	----	----		07-Nov-2025	----	----	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA 2544-A-11	E144	01-Nov-2025	----	----	----		07-Nov-2025	----	----	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA 2544-A-12	E144	01-Nov-2025	----	----	----		07-Nov-2025	----	----	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA 2544-A-2	E144	01-Nov-2025	----	----	----		07-Nov-2025	----	----	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA 2544-A-3	E144	01-Nov-2025	----	----	----		07-Nov-2025	----	----	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA 2544-A-4	E144	01-Nov-2025	----	----	----		07-Nov-2025	----	----	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA 2544-A-5	E144	01-Nov-2025	----	----	----		07-Nov-2025	----	----	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA 2544-A-6	E144	01-Nov-2025	----	----	----		07-Nov-2025	----	----	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA 2544-A-7	E144	01-Nov-2025	----	----	----		07-Nov-2025	----	----	



Matrix: Soil/Solid

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

Analyte Group : Analytical Method 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		
<b>Physical Tests : Moisture Content by Gravimetry</b>											
LDPE bag BA 2544-A-8	E144	01-Nov-2025	----	----	----		07-Nov-2025	----	----		
<b>Physical Tests : Moisture Content by Gravimetry</b>											
LDPE bag BA 2544-A-9	E144	01-Nov-2025	----	----	----		07-Nov-2025	----	----		
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA 2544-A-1	E108	01-Nov-2025	08-Nov-2025	30 days	7 days	✔	08-Nov-2025	30 days	7 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA 2544-A-10	E108	01-Nov-2025	08-Nov-2025	30 days	7 days	✔	08-Nov-2025	30 days	7 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA 2544-A-11	E108	01-Nov-2025	08-Nov-2025	30 days	7 days	✔	08-Nov-2025	30 days	7 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA 2544-A-12	E108	01-Nov-2025	08-Nov-2025	30 days	7 days	✔	08-Nov-2025	30 days	7 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA 2544-A-2	E108	01-Nov-2025	08-Nov-2025	30 days	7 days	✔	08-Nov-2025	30 days	7 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA 2544-A-3	E108	01-Nov-2025	08-Nov-2025	30 days	7 days	✔	08-Nov-2025	30 days	7 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA 2544-A-4	E108	01-Nov-2025	08-Nov-2025	30 days	7 days	✔	08-Nov-2025	30 days	7 days	✔	



Matrix: Soil/Solid

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

Analyte Group : Analytical Method 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	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>										
LDPE bag BA 2544-A-5	E108	01-Nov-2025	08-Nov-2025	30 days	7 days	✔	08-Nov-2025	30 days	7 days	✔
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>										
LDPE bag BA 2544-A-6	E108	01-Nov-2025	08-Nov-2025	30 days	7 days	✔	08-Nov-2025	30 days	7 days	✔
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>										
LDPE bag BA 2544-A-7	E108	01-Nov-2025	08-Nov-2025	30 days	7 days	✔	08-Nov-2025	30 days	7 days	✔
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>										
LDPE bag BA 2544-A-8	E108	01-Nov-2025	08-Nov-2025	30 days	7 days	✔	08-Nov-2025	30 days	7 days	✔
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>										
LDPE bag BA 2544-A-9	E108	01-Nov-2025	08-Nov-2025	30 days	7 days	✔	08-Nov-2025	30 days	7 days	✔
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>										
Glass vial - total (lab preserved) BA 2544-A-1	E512	06-Nov-2025	07-Nov-2025	33 days	6 days	✔	07-Nov-2025	33 days	6 days	✔
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>										
Glass vial - total (lab preserved) BA 2544-A-2	E512	06-Nov-2025	07-Nov-2025	33 days	6 days	✔	07-Nov-2025	33 days	6 days	✔
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>										
Glass vial - total (lab preserved) BA 2544-A-3	E512	06-Nov-2025	07-Nov-2025	33 days	6 days	✔	07-Nov-2025	33 days	6 days	✔
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>										
Glass vial - total (lab preserved) BA 2544-A-4	E512	06-Nov-2025	07-Nov-2025	33 days	6 days	✔	07-Nov-2025	33 days	6 days	✔



Matrix: Soil/Solid

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

Analyte Group : Analytical Method 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		
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>											
Glass vial - total (lab preserved) BA 2544-A-5	E512	06-Nov-2025	07-Nov-2025	33 days	6 days	✔	07-Nov-2025	33 days	6 days	✔	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>											
Glass vial - total (lab preserved) BA 2544-A-6	E512	06-Nov-2025	07-Nov-2025	33 days	6 days	✔	07-Nov-2025	33 days	6 days	✔	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>											
Glass vial - total (lab preserved) BA 2544-A-10	E512	06-Nov-2025	08-Nov-2025	33 days	7 days	✔	08-Nov-2025	33 days	7 days	✔	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>											
Glass vial - total (lab preserved) BA 2544-A-11	E512	06-Nov-2025	08-Nov-2025	33 days	7 days	✔	08-Nov-2025	33 days	7 days	✔	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>											
Glass vial - total (lab preserved) BA 2544-A-12	E512	06-Nov-2025	08-Nov-2025	33 days	7 days	✔	08-Nov-2025	33 days	7 days	✔	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>											
Glass vial - total (lab preserved) BA 2544-A-7	E512	06-Nov-2025	08-Nov-2025	33 days	7 days	✔	08-Nov-2025	33 days	7 days	✔	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>											
Glass vial - total (lab preserved) BA 2544-A-8	E512	06-Nov-2025	08-Nov-2025	33 days	7 days	✔	08-Nov-2025	33 days	7 days	✔	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>											
Glass vial - total (lab preserved) BA 2544-A-9	E512	06-Nov-2025	08-Nov-2025	33 days	7 days	✔	08-Nov-2025	33 days	7 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA 2544-A-1	E444	06-Nov-2025	07-Nov-2025	185 days	6 days	✔	08-Nov-2025	185 days	6 days	✔	



Matrix: Soil/Solid

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

Analyte Group : Analytical Method 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		
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA 2544-A-10	E444	06-Nov-2025	07-Nov-2025	185 days	6 days	✔	08-Nov-2025	185 days	6 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA 2544-A-11	E444	06-Nov-2025	07-Nov-2025	185 days	6 days	✔	08-Nov-2025	185 days	6 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA 2544-A-12	E444	06-Nov-2025	07-Nov-2025	185 days	6 days	✔	08-Nov-2025	185 days	6 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA 2544-A-2	E444	06-Nov-2025	07-Nov-2025	185 days	6 days	✔	08-Nov-2025	185 days	6 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA 2544-A-3	E444	06-Nov-2025	07-Nov-2025	185 days	6 days	✔	08-Nov-2025	185 days	6 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA 2544-A-4	E444	06-Nov-2025	07-Nov-2025	185 days	6 days	✔	08-Nov-2025	185 days	6 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA 2544-A-5	E444	06-Nov-2025	07-Nov-2025	185 days	6 days	✔	08-Nov-2025	185 days	6 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA 2544-A-6	E444	06-Nov-2025	07-Nov-2025	185 days	6 days	✔	08-Nov-2025	185 days	6 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA 2544-A-7	E444	06-Nov-2025	07-Nov-2025	185 days	6 days	✔	08-Nov-2025	185 days	6 days	✔	



Matrix: Soil/Solid

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

Analyte Group : Analytical Method 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		
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA 2544-A-8	E444	06-Nov-2025	07-Nov-2025	185 days	6 days	✔	08-Nov-2025	185 days	6 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA 2544-A-9	E444	06-Nov-2025	07-Nov-2025	185 days	6 days	✔	08-Nov-2025	185 days	6 days	✔	
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>											
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA 2544-A-1	EPP444	01-Nov-2025	06-Nov-2025	----	----		----	28 days	5 days	✔	
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>											
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA 2544-A-10	EPP444	01-Nov-2025	06-Nov-2025	----	----		----	28 days	5 days	✔	
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>											
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA 2544-A-11	EPP444	01-Nov-2025	06-Nov-2025	----	----		----	28 days	5 days	✔	
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>											
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA 2544-A-12	EPP444	01-Nov-2025	06-Nov-2025	----	----		----	28 days	5 days	✔	
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>											
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA 2544-A-2	EPP444	01-Nov-2025	06-Nov-2025	----	----		----	28 days	5 days	✔	
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>											
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA 2544-A-3	EPP444	01-Nov-2025	06-Nov-2025	----	----		----	28 days	5 days	✔	
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>											
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA 2544-A-4	EPP444	01-Nov-2025	06-Nov-2025	----	----		----	28 days	5 days	✔	



Matrix: **Soil/Solid**

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

Analyte Group : Analytical Method 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	
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA 2544-A-5	EPP444	01-Nov-2025	06-Nov-2025	----	----		----	28 days	5 days	✔
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA 2544-A-6	EPP444	01-Nov-2025	06-Nov-2025	----	----		----	28 days	5 days	✔
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA 2544-A-7	EPP444	01-Nov-2025	06-Nov-2025	----	----		----	28 days	5 days	✔
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA 2544-A-8	EPP444	01-Nov-2025	06-Nov-2025	----	----		----	28 days	5 days	✔
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA 2544-A-9	EPP444	01-Nov-2025	06-Nov-2025	----	----		----	28 days	5 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: **Soil/Solid**

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

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
pH by Meter (1:2 Soil:Water Extraction)	E108	2325583	1	18	5.5	5.0	✔
Moisture Content by Gravimetry	E144	2325584	1	12	8.3	5.0	✔
Metals in Soil/Solid by CRC ICPMS	E440	2325582	1	15	6.6	5.0	✔
Metals by CRC ICPMS (TCLP)	E444	2325623	2	13	15.3	5.0	✔
Mercury in Soil/Solid by CVAAS	E510	2325581	1	15	6.6	5.0	✔
Mercury by CVAAS (TCLP)	E512	2325622	2	13	15.3	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
pH by Meter (1:2 Soil:Water Extraction)	E108	2325583	1	18	5.5	5.0	✔
Moisture Content by Gravimetry	E144	2325584	1	12	8.3	5.0	✔
Metals in Soil/Solid by CRC ICPMS	E440	2325582	2	15	13.3	10.0	✔
Mercury in Soil/Solid by CVAAS	E510	2325581	2	15	13.3	10.0	✔
<b>Method Blanks (MB)</b>							
Moisture Content by Gravimetry	E144	2325584	1	12	8.3	5.0	✔
Metals in Soil/Solid by CRC ICPMS	E440	2325582	1	15	6.6	5.0	✔
Metals by CRC ICPMS (TCLP)	E444	2325623	2	13	15.3	5.0	✔
Mercury in Soil/Solid by CVAAS	E510	2325581	1	15	6.6	5.0	✔
Mercury by CVAAS (TCLP)	E512	2325005	2	13	15.3	5.0	✔
<b>Matrix Spikes (MS)</b>							
Metals by CRC ICPMS (TCLP)	E444	2325623	2	13	15.3	5.0	✔
Mercury by CVAAS (TCLP)	E512	2325005	2	13	15.3	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
pH by Meter (1:2 Soil:Water Extraction)	E108 ALS Environmental - Vancouver	Soil/Solid	BC Lab Manual	pH is determined by potentiometric measurement with a pH electrode at ambient laboratory temperature (normally $20 \pm 5^{\circ}\text{C}$ ), and is carried out in accordance with procedures described in the BC Lab Manual (prescriptive method). The procedure involves mixing the dried (at $<60^{\circ}\text{C}$ ) and sieved (10mesh/2mm) sample with ultra pure water at a 1:2 ratio of sediment to water. The pH is then measured by a standard pH probe.
Moisture Content by Gravimetry	E144 ALS Environmental - Vancouver	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at $105^{\circ}\text{C}$ . Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Metals in Soil/Solid by CRC ICPMS	E440 ALS Environmental - Vancouver	Soil/Solid	EPA 6020B (mod)	This method is intended to liberate metals that may be environmentally available. Samples are dried, then sieved through a 2 mm sieve, and digested with $\text{HNO}_3$ and $\text{HCl}$ .  Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, V, W, and Zr. Silicate minerals are not solubilized. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. This method does not adequately recover elemental sulfur, and is unsuitable for assessment of elemental sulfur standards or guidelines.  Analysis is by Collision/Reaction Cell ICPMS.
Metals by CRC ICPMS (TCLP)	E444 ALS Environmental - Vancouver	Soil/Solid	EPA 1311/6020B (mod)	An extract produced by the Toxicity Characteristic Leachate Procedure (TCLP) as per EPA 1311 is analyzed by Collision/Reaction Cell ICPMS.
Mercury in Soil/Solid by CVAAS	E510 ALS Environmental - Vancouver	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with $\text{HNO}_3$ and $\text{HCl}$ , followed by CVAAS analysis.
Mercury by CVAAS (TCLP)	E512 ALS Environmental - Vancouver	Soil/Solid	EPA 1311/245.1 (mod)	An extract produced by the Toxicity Characteristic Leachate Procedure (TCLP) as per EPA 1311 is analyzed by CVAAS.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108 ALS Environmental - Vancouver	Soil/Solid	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL	The procedure involves mixing the dried (at $<60^{\circ}\text{C}$ ) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water.



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Digestion for Metals and Mercury	EP440  ALS Environmental - Vancouver	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO <sub>3</sub> and HCl. This method is intended to liberate metals that may be environmentally available.
TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)	EPP444  ALS Environmental - Vancouver	Soil/Solid	EPA 1311	Preparation of a Toxicity Characteristic Leaching Procedure (TCLP) solid sample involves particle size reduction, homogenization, then determination of appropriate extraction fluid. A measured portion of fresh subsample is placed in an extraction bottle with the appropriate extraction fluid then tumbled in a rotary extractor for 18+/- 2 hours at 23 +/- 2 C. The liquid leachate is filtered to separate from solids then bottled and prepared for analytical tests.

## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: VA25C9471</b>	<b>Page</b>	: 1 of 14
<b>Client</b>	: Veolia Environmental Services Canada	<b>Laboratory</b>	: ALS Environmental - Vancouver
<b>Contact</b>	: Brian Graham	<b>Account Manager</b>	: Gulraj Dhanaua
<b>Address</b>	: 5150 Riverbend Dr. Burnaby BC Canada V3N 4V3	<b>Address</b>	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
<b>Telephone</b>	: ----	<b>Telephone</b>	: +1 604 253 4188
<b>Project</b>	: Veolia Weekly Bottom Ash-Suite	<b>Date Samples Received</b>	: 04-Nov-2025 12:20
<b>PO</b>	: 1000497676	<b>Date Analysis Commenced</b>	: 06-Nov-2025
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 10-Nov-2025 09:21
<b>Sampler</b>	: ----		
<b>Site</b>	: Metro Van Ash Sampling Program		
<b>Quote number</b>	: VA25-VISI100-001		
<b>No. of samples received</b>	: 12		
<b>No. of samples analysed</b>	: 12		

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 Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

### 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>
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## 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 Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

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

## Workorder Comments

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

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### 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: Soil/Solid

					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
<b>Physical Tests (QC Lot: 2325583)</b>											
VA25C9471-001	BA 2544-A-1	pH (1:2 soil:water)	----	E108	0.10	pH units	10.27	10.26	0.1%	5%	----
<b>Physical Tests (QC Lot: 2325584)</b>											
VA25C9471-001	BA 2544-A-1	Moisture	----	E144	0.25	%	22.7	23.2	2.32%	20%	----
<b>Metals (QC Lot: 2325581)</b>											
VA25C9471-001	BA 2544-A-1	Mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	0	Diff <2x LOR	----
<b>Metals (QC Lot: 2325582)</b>											
VA25C9471-001	BA 2544-A-1	Aluminum	7429-90-5	E440	50	mg/kg	44500	56700	24.2%	40%	----
		Antimony	7440-36-0	E440	0.10	mg/kg	112	499	127%	30%	DUP-H
		Arsenic	7440-38-2	E440	0.10	mg/kg	11.8	17.9	41.4%	30%	DUP-H
		Barium	7440-39-3	E440	0.50	mg/kg	590	668	12.4%	40%	----
		Beryllium	7440-41-7	E440	0.10	mg/kg	0.37	0.38	0.010	Diff <2x LOR	----
		Bismuth	7440-69-9	E440	0.20	mg/kg	11.7	16.9	36.1%	30%	DUP-H
		Boron	7440-42-8	E440	5.0	mg/kg	201	182	9.53%	30%	----
		Cadmium	7440-43-9	E440	0.020	mg/kg	8.12	6.63	20.2%	30%	----
		Calcium	7440-70-2	E440	50	mg/kg	136000	132000	3.65%	30%	----
		Chromium	7440-47-3	E440	0.50	mg/kg	197	195	1.38%	30%	----
		Cobalt	7440-48-4	E440	0.10	mg/kg	104	45.8	77.6%	30%	DUP-H
		Copper	7440-50-8	E440	0.50	mg/kg	5650	2390	81.1%	30%	DUP-H
		Iron	7439-89-6	E440	50	mg/kg	59000	74200	22.9%	30%	----
		Lead	7439-92-1	E440	0.50	mg/kg	244	942	118%	40%	DUP-H
		Lithium	7439-93-2	E440	2.0	mg/kg	40.8	32.6	22.4%	30%	----
		Magnesium	7439-95-4	E440	20	mg/kg	12300	12800	3.54%	30%	----
		Manganese	7439-96-5	E440	1.0	mg/kg	1030	1260	20.2%	30%	----
		Molybdenum	7439-98-7	E440	0.10	mg/kg	21.7	24.9	13.7%	40%	----
		Nickel	7440-02-0	E440	0.50	mg/kg	378	557	38.3%	30%	DUP-H
		Phosphorus	7723-14-0	E440	50	mg/kg	12000	12100	1.20%	30%	----
		Potassium	7440-09-7	E440	100	mg/kg	5540	5790	4.40%	40%	----
		Selenium	7782-49-2	E440	0.20	mg/kg	0.37	0.38	0.009	Diff <2x LOR	----
		Silver	7440-22-4	E440	0.10	mg/kg	9.16	5.31	53.2%	40%	DUP-H
		Sodium	7440-23-5	E440	50	mg/kg	16600	18200	8.85%	40%	----



Sub-Matrix: Soil/Solid					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
<b>Metals (QC Lot: 2325582) - continued</b>											
VA25C9471-001	BA 2544-A-1	Strontium	7440-24-6	E440	0.50	mg/kg	329	374	12.6%	40%	----
		Sulfur	7704-34-9	E440	1000	mg/kg	10400	10500	1.57%	30%	----
		Thallium	7440-28-0	E440	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Tin	7440-31-5	E440	2.0	mg/kg	98.7	11700	197%	40%	DUP-H
		Titanium	7440-32-6	E440	1.0	mg/kg	323	508	44.4%	40%	DUP-H
		Tungsten	7440-33-7	E440	0.50	mg/kg	16.9	11.0	42.0%	30%	DUP-H
		Uranium	7440-61-1	E440	0.050	mg/kg	1.79	1.74	2.78%	30%	----
		Vanadium	7440-62-2	E440	0.20	mg/kg	28.2	31.3	10.6%	30%	----
		Zinc	7440-66-6	E440	2.0	mg/kg	4210	3800	10.1%	30%	----
Zirconium	7440-67-7	E440	1.0	mg/kg	1.9	# 4.2	2.3	Diff <2x LOR	DUP-H,J		
<b>TCLP Metals (QC Lot: 2325005)</b>											
KS2504519-001	Anonymous	Mercury, TCLP	7439-97-6	E512	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>TCLP Metals (QC Lot: 2325006)</b>											
KS2504519-001	Anonymous	Antimony, TCLP	7440-36-0	E444	1.00	mg/L	<1.00	<1.00	0	Diff <2x LOR	----
		Arsenic, TCLP	7440-38-2	E444	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	<2.5	0	Diff <2x LOR	----
		Beryllium, TCLP	7440-41-7	E444	0.025	mg/L	<0.025	<0.025	0	Diff <2x LOR	----
		Boron, TCLP	7440-42-8	E444	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Cadmium, TCLP	7440-43-9	E444	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Calcium, TCLP	7440-70-2	E444	10	mg/L	208	211	1.64%	30%	----
		Chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	<0.25	0	Diff <2x LOR	----
		Cobalt, TCLP	7440-48-4	E444	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Copper, TCLP	7440-50-8	E444	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Iron, TCLP	7439-89-6	E444	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----
		Lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	<0.25	0	Diff <2x LOR	----
		Magnesium, TCLP	7439-95-4	E444	2.5	mg/L	67.1	67.4	0.517%	30%	----
		Nickel, TCLP	7440-02-0	E444	0.25	mg/L	<0.25	<0.25	0	Diff <2x LOR	----
		Selenium, TCLP	7782-49-2	E444	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
		Silver, TCLP	7440-22-4	E444	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Thallium, TCLP	7440-28-0	E444	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Uranium, TCLP	7440-61-1	E444	0.20	mg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	<0.15	0	Diff <2x LOR	----
		Zinc, TCLP	7440-66-6	E444	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Zirconium, TCLP	7440-67-7	E444	10	mg/L	<10	<10	0	Diff <2x LOR	----		



Sub-Matrix: Soil/Solid					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
<b>TCLP Metals (QC Lot: 2325622)</b>											
VA25C9471-007	BA 2544-A-7	Mercury, TCLP	7439-97-6	E512	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>TCLP Metals (QC Lot: 2325623)</b>											
VA25C9471-007	BA 2544-A-7	Antimony, TCLP	7440-36-0	E444	1.00	mg/L	<1.00	<1.00	0	Diff <2x LOR	----
		Arsenic, TCLP	7440-38-2	E444	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	<2.5	0	Diff <2x LOR	----
		Beryllium, TCLP	7440-41-7	E444	0.025	mg/L	<0.025	<0.025	0	Diff <2x LOR	----
		Boron, TCLP	7440-42-8	E444	0.50	mg/L	0.87	0.85	0.02	Diff <2x LOR	----
		Cadmium, TCLP	7440-43-9	E444	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Calcium, TCLP	7440-70-2	E444	10	mg/L	794	756	4.89%	30%	----
		Chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	<0.25	0	Diff <2x LOR	----
		Cobalt, TCLP	7440-48-4	E444	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Copper, TCLP	7440-50-8	E444	0.050	mg/L	0.593	0.583	1.66%	30%	----
		Iron, TCLP	7439-89-6	E444	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----
		Lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	<0.25	0	Diff <2x LOR	----
		Magnesium, TCLP	7439-95-4	E444	2.5	mg/L	10.0	9.6	0.4	Diff <2x LOR	----
		Nickel, TCLP	7440-02-0	E444	0.25	mg/L	<0.25	<0.25	0	Diff <2x LOR	----
		Selenium, TCLP	7782-49-2	E444	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
		Silver, TCLP	7440-22-4	E444	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Thallium, TCLP	7440-28-0	E444	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
Uranium, TCLP	7440-61-1	E444	0.20	mg/L	<0.20	<0.20	0	Diff <2x LOR	----		
Vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	<0.15	0	Diff <2x LOR	----		
Zinc, TCLP	7440-66-6	E444	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----		
Zirconium, TCLP	7440-67-7	E444	10	mg/L	<10	<10	0	Diff <2x LOR	----		

**Qualifiers**

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
J	Duplicate results and limits are expressed in terms of absolute difference.



## 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: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 2325584)</b>						
Moisture	---	E144	0.25	%	<0.25	---
<b>Metals (QCLot: 2325581)</b>						
Mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	---
<b>Metals (QCLot: 2325582)</b>						
Aluminum	7429-90-5	E440	50	mg/kg	<50	---
Antimony	7440-36-0	E440	0.1	mg/kg	<0.10	---
Arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	---
Barium	7440-39-3	E440	0.5	mg/kg	<0.50	---
Beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	---
Bismuth	7440-69-9	E440	0.2	mg/kg	<0.20	---
Boron	7440-42-8	E440	5	mg/kg	<5.0	---
Cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	---
Calcium	7440-70-2	E440	50	mg/kg	<50	---
Chromium	7440-47-3	E440	0.5	mg/kg	<0.50	---
Cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	---
Copper	7440-50-8	E440	0.5	mg/kg	<0.50	---
Iron	7439-89-6	E440	50	mg/kg	<50	---
Lead	7439-92-1	E440	0.5	mg/kg	<0.50	---
Lithium	7439-93-2	E440	2	mg/kg	<2.0	---
Magnesium	7439-95-4	E440	20	mg/kg	<20	---
Manganese	7439-96-5	E440	1	mg/kg	<1.0	---
Molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	---
Nickel	7440-02-0	E440	0.5	mg/kg	<0.50	---
Phosphorus	7723-14-0	E440	50	mg/kg	<50	---
Potassium	7440-09-7	E440	100	mg/kg	<100	---
Selenium	7782-49-2	E440	0.2	mg/kg	<0.20	---
Silver	7440-22-4	E440	0.1	mg/kg	<0.10	---
Sodium	7440-23-5	E440	50	mg/kg	<50	---
Strontium	7440-24-6	E440	0.5	mg/kg	<0.50	---
Sulfur	7704-34-9	E440	1000	mg/kg	<1000	---
Thallium	7440-28-0	E440	0.05	mg/kg	<0.050	---
Tin	7440-31-5	E440	2	mg/kg	<2.0	---



Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Metals (QCLot: 2325582) - continued</b>						
Titanium	7440-32-6	E440	1	mg/kg	<1.0	---
Tungsten	7440-33-7	E440	0.5	mg/kg	<0.50	---
Uranium	7440-61-1	E440	0.05	mg/kg	<0.050	---
Vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	---
Zinc	7440-66-6	E440	2	mg/kg	<2.0	---
Zirconium	7440-67-7	E440	1	mg/kg	<1.0	---
<b>TCLP Metals (QCLot: 2325005)</b>						
Mercury, TCLP	7439-97-6	E512	0.001	mg/L	<0.0010	---
<b>TCLP Metals (QCLot: 2325006)</b>						
Antimony, TCLP	7440-36-0	E444	0.1	mg/L	<0.10	---
Arsenic, TCLP	7440-38-2	E444	1	mg/L	<1.0	---
Barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	---
Beryllium, TCLP	7440-41-7	E444	0.025	mg/L	<0.025	---
Boron, TCLP	7440-42-8	E444	0.5	mg/L	<0.50	---
Cadmium, TCLP	7440-43-9	E444	0.05	mg/L	<0.050	---
Calcium, TCLP	7440-70-2	E444	10	mg/L	<10	---
Chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	---
Cobalt, TCLP	7440-48-4	E444	0.05	mg/L	<0.050	---
Copper, TCLP	7440-50-8	E444	0.05	mg/L	<0.050	---
Iron, TCLP	7439-89-6	E444	5	mg/L	<5.0	---
Lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	---
Magnesium, TCLP	7439-95-4	E444	2.5	mg/L	<2.5	---
Nickel, TCLP	7440-02-0	E444	0.25	mg/L	<0.25	---
Selenium, TCLP	7782-49-2	E444	0.1	mg/L	<0.10	---
Silver, TCLP	7440-22-4	E444	0.05	mg/L	<0.050	---
Thallium, TCLP	7440-28-0	E444	1	mg/L	<1.0	---
Uranium, TCLP	7440-61-1	E444	0.2	mg/L	<0.20	---
Vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	---
Zinc, TCLP	7440-66-6	E444	0.5	mg/L	<0.50	---
Zirconium, TCLP	7440-67-7	E444	10	mg/L	<10	---
<b>TCLP Metals (QCLot: 2325622)</b>						
Mercury, TCLP	7439-97-6	E512	0.001	mg/L	<0.0010	---
<b>TCLP Metals (QCLot: 2325623)</b>						
Antimony, TCLP	7440-36-0	E444	0.1	mg/L	<0.10	---
Arsenic, TCLP	7440-38-2	E444	1	mg/L	<1.0	---



Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>TCLP Metals (QCLot: 2325623) - continued</b>						
Barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	----
Beryllium, TCLP	7440-41-7	E444	0.025	mg/L	<0.025	----
Boron, TCLP	7440-42-8	E444	0.5	mg/L	<0.50	----
Cadmium, TCLP	7440-43-9	E444	0.05	mg/L	<0.050	----
Calcium, TCLP	7440-70-2	E444	10	mg/L	<10	----
Chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	----
Cobalt, TCLP	7440-48-4	E444	0.05	mg/L	<0.050	----
Copper, TCLP	7440-50-8	E444	0.05	mg/L	<0.050	----
Iron, TCLP	7439-89-6	E444	5	mg/L	<5.0	----
Lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	----
Magnesium, TCLP	7439-95-4	E444	2.5	mg/L	<2.5	----
Nickel, TCLP	7440-02-0	E444	0.25	mg/L	<0.25	----
Selenium, TCLP	7782-49-2	E444	0.1	mg/L	<0.10	----
Silver, TCLP	7440-22-4	E444	0.05	mg/L	<0.050	----
Thallium, TCLP	7440-28-0	E444	1	mg/L	<1.0	----
Uranium, TCLP	7440-61-1	E444	0.2	mg/L	<0.20	----
Vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	----
Zinc, TCLP	7440-66-6	E444	0.5	mg/L	<0.50	----
Zirconium, TCLP	7440-67-7	E444	10	mg/L	<10	----



## 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: Soil/Solid

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 2325583)</b>									
pH (1:2 soil:water)	---	E108	---	pH units	6 pH units	100	95.0	105	---
<b>Physical Tests (QCLot: 2325584)</b>									
Moisture	---	E144	0.25	%	50 %	101	90.0	110	---
<b>Metals (QCLot: 2325581)</b>									
Mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	94.5	80.0	120	---
<b>Metals (QCLot: 2325582)</b>									
Aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	90.8	80.0	120	---
Antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	99.7	80.0	120	---
Arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	99.2	80.0	120	---
Barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	96.5	80.0	120	---
Beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	91.7	80.0	120	---
Bismuth	7440-69-9	E440	0.2	mg/kg	100 mg/kg	90.2	80.0	120	---
Boron	7440-42-8	E440	5	mg/kg	100 mg/kg	95.3	80.0	120	---
Cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	91.6	80.0	120	---
Calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	90.2	80.0	120	---
Chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	91.8	80.0	120	---
Cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	92.6	80.0	120	---
Copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	90.4	80.0	120	---
Iron	7439-89-6	E440	50	mg/kg	100 mg/kg	87.8	80.0	120	---
Lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	93.8	80.0	120	---
Lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	89.9	80.0	120	---
Magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	97.3	80.0	120	---
Manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	94.5	80.0	120	---
Molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	100	80.0	120	---
Nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	91.9	80.0	120	---
Phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	99.9	80.0	120	---
Potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	93.5	80.0	120	---
Selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	89.9	80.0	120	---
Silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	85.0	80.0	120	---
Sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	93.9	80.0	120	---
Strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	94.2	80.0	120	---
Sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	95.2	80.0	120	---



Sub-Matrix: Soil/Solid

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
<b>Metals (QCLot: 2325582) - continued</b>									
Thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	93.6	80.0	120	----
Tin	7440-31-5	E440	2	mg/kg	50 mg/kg	95.6	80.0	120	----
Titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	97.9	80.0	120	----
Tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	96.1	80.0	120	----
Uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	91.6	80.0	120	----
Vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	93.9	80.0	120	----
Zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	92.1	80.0	120	----
Zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	99.2	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: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>TCLP Metals (QCLot: 2325005)</b>										
KS2504519-001	Anonymous	Mercury, TCLP	7439-97-6	E512	0.0028 mg/L	0.003 mg/L	94.0	50.0	140	----
<b>TCLP Metals (QCLot: 2325006)</b>										
KS2504519-001	Anonymous	Antimony, TCLP	7440-36-0	E444	4.96 mg/L	5 mg/L	99.3	50.0	140	----
		Arsenic, TCLP	7440-38-2	E444	4.7 mg/L	5 mg/L	94.7	50.0	140	----
		Barium, TCLP	7440-39-3	E444	12.2 mg/L	12.5 mg/L	97.6	50.0	140	----
		Beryllium, TCLP	7440-41-7	E444	0.242 mg/L	0.25 mg/L	96.8	50.0	140	----
		Boron, TCLP	7440-42-8	E444	9.30 mg/L	10 mg/L	93.0	50.0	140	----
		Cadmium, TCLP	7440-43-9	E444	0.237 mg/L	0.25 mg/L	94.7	50.0	140	----
		Calcium, TCLP	7440-70-2	E444	240 mg/L	250 mg/L	96.0	50.0	140	----
		Chromium, TCLP	7440-47-3	E444	1.20 mg/L	1.25 mg/L	96.2	50.0	140	----
		Cobalt, TCLP	7440-48-4	E444	0.233 mg/L	0.25 mg/L	93.3	50.0	140	----
		Copper, TCLP	7440-50-8	E444	2.29 mg/L	2.5 mg/L	91.6	50.0	140	----
		Iron, TCLP	7439-89-6	E444	227 mg/L	250 mg/L	90.8	50.0	140	----
		Lead, TCLP	7439-92-1	E444	9.67 mg/L	10 mg/L	96.7	50.0	140	----
		Magnesium, TCLP	7439-95-4	E444	244 mg/L	250 mg/L	97.6	50.0	140	----
		Nickel, TCLP	7440-02-0	E444	2.36 mg/L	2.5 mg/L	94.3	50.0	140	----
		Selenium, TCLP	7782-49-2	E444	4.62 mg/L	5 mg/L	92.3	50.0	140	----
		Silver, TCLP	7440-22-4	E444	0.085 mg/L	0.1 mg/L	85.3	50.0	140	----
		Thallium, TCLP	7440-28-0	E444	4.7 mg/L	5 mg/L	93.9	50.0	140	----
		Uranium, TCLP	7440-61-1	E444	4.72 mg/L	5 mg/L	94.4	50.0	150	----
Vanadium, TCLP	7440-62-2	E444	0.72 mg/L	0.75 mg/L	96.4	50.0	140	----		
Zinc, TCLP	7440-66-6	E444	9.58 mg/L	10 mg/L	95.8	50.0	140	----		
Zirconium, TCLP	7440-67-7	E444	0.8 mg/L	1 mg/L	81.8	50.0	150	----		
<b>TCLP Metals (QCLot: 2325622)</b>										
VA25C9471-007	BA 2544-A-7	Mercury, TCLP	7439-97-6	E512	0.0028 mg/L	0.003 mg/L	93.2	50.0	140	----
<b>TCLP Metals (QCLot: 2325623)</b>										
VA25C9471-007	BA 2544-A-7	Antimony, TCLP	7440-36-0	E444	5.06 mg/L	5 mg/L	101	50.0	140	----
		Arsenic, TCLP	7440-38-2	E444	4.8 mg/L	5 mg/L	95.9	50.0	140	----
		Barium, TCLP	7440-39-3	E444	13.3 mg/L	12.5 mg/L	106	50.0	140	----
		Beryllium, TCLP	7440-41-7	E444	0.226 mg/L	0.25 mg/L	90.4	50.0	140	----
		Boron, TCLP	7440-42-8	E444	8.83 mg/L	10 mg/L	88.3	50.0	140	----
		Cadmium, TCLP	7440-43-9	E444	0.236 mg/L	0.25 mg/L	94.5	50.0	140	----
		Calcium, TCLP	7440-70-2	E444	ND mg/L	----	ND	50.0	140	----
		Chromium, TCLP	7440-47-3	E444	1.20 mg/L	1.25 mg/L	95.7	50.0	140	----
		Cobalt, TCLP	7440-48-4	E444	0.235 mg/L	0.25 mg/L	94.1	50.0	140	----
		Copper, TCLP	7440-50-8	E444	2.25 mg/L	2.5 mg/L	90.0	50.0	140	----
		Iron, TCLP	7439-89-6	E444	229 mg/L	250 mg/L	91.5	50.0	140	----
		Lead, TCLP	7439-92-1	E444	9.47 mg/L	10 mg/L	94.7	50.0	140	----



Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>TCLP Metals (QCLot: 2325623) - continued</b>										
VA25C9471-007	BA 2544-A-7	Magnesium, TCLP	7439-95-4	E444	244 mg/L	250 mg/L	97.4	50.0	140	----
		Nickel, TCLP	7440-02-0	E444	2.37 mg/L	2.5 mg/L	95.0	50.0	140	----
		Selenium, TCLP	7782-49-2	E444	4.83 mg/L	5 mg/L	96.7	50.0	140	----
		Silver, TCLP	7440-22-4	E444	0.084 mg/L	0.1 mg/L	84.5	50.0	140	----
		Thallium, TCLP	7440-28-0	E444	4.6 mg/L	5 mg/L	91.3	50.0	140	----
		Uranium, TCLP	7440-61-1	E444	4.75 mg/L	5 mg/L	95.1	50.0	150	----
		Vanadium, TCLP	7440-62-2	E444	0.72 mg/L	0.75 mg/L	96.1	50.0	140	----
		Zinc, TCLP	7440-66-6	E444	9.49 mg/L	10 mg/L	94.9	50.0	140	----
		Zirconium, TCLP	7440-67-7	E444	0.8 mg/L	1 mg/L	82.3	50.0	150	----



## Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
							Low	High	
<b>Metals (QCLot: 2325581)</b>									
QC-2325581-003	MRCA-21	Mercury	7439-97-6	E510	0.068 mg/kg	93.8	70.0	130	----
<b>Metals (QCLot: 2325582)</b>									
QC-2325582-003	MRCA-21	Aluminum	7429-90-5	E440	22500 mg/kg	97.7	70.0	130	----
QC-2325582-003	MRCA-21	Antimony	7440-36-0	E440	24.8 mg/kg	91.5	70.0	130	----
QC-2325582-003	MRCA-21	Arsenic	7440-38-2	E440	21.2 mg/kg	91.2	70.0	130	----
QC-2325582-003	MRCA-21	Barium	7440-39-3	E440	788 mg/kg	103	70.0	130	----
QC-2325582-003	MRCA-21	Beryllium	7440-41-7	E440	1.82 mg/kg	104	70.0	130	----
QC-2325582-003	MRCA-21	Bismuth	7440-69-9	E440	1.78 mg/kg	92.6	70.0	130	----
QC-2325582-003	MRCA-21	Cadmium	7440-43-9	E440	2.15 mg/kg	97.3	70.0	130	----
QC-2325582-003	MRCA-21	Calcium	7440-70-2	E440	4900 mg/kg	96.9	70.0	130	----
QC-2325582-003	MRCA-21	Chromium	7440-47-3	E440	56.9 mg/kg	98.1	70.0	130	----
QC-2325582-003	MRCA-21	Cobalt	7440-48-4	E440	32 mg/kg	96.3	70.0	130	----
QC-2325582-003	MRCA-21	Copper	7440-50-8	E440	969 mg/kg	97.2	70.0	130	----
QC-2325582-003	MRCA-21	Iron	7439-89-6	E440	32700 mg/kg	93.8	70.0	130	----
QC-2325582-003	MRCA-21	Lead	7439-92-1	E440	919 mg/kg	92.0	70.0	130	----
QC-2325582-003	MRCA-21	Lithium	7439-93-2	E440	47.3 mg/kg	101	70.0	130	----
QC-2325582-003	MRCA-21	Magnesium	7439-95-4	E440	7780 mg/kg	101	70.0	130	----
QC-2325582-003	MRCA-21	Manganese	7439-96-5	E440	8640 mg/kg	97.2	70.0	130	----
QC-2325582-003	MRCA-21	Molybdenum	7439-98-7	E440	25.1 mg/kg	97.3	70.0	130	----
QC-2325582-003	MRCA-21	Nickel	7440-02-0	E440	1000 mg/kg	98.7	70.0	130	----
QC-2325582-003	MRCA-21	Phosphorus	7723-14-0	E440	660 mg/kg	94.3	70.0	130	----
QC-2325582-003	MRCA-21	Potassium	7440-09-7	E440	10800 mg/kg	102	70.0	130	----
QC-2325582-003	MRCA-21	Selenium	7782-49-2	E440	1.04 mg/kg	94.6	60.0	140	----
QC-2325582-003	MRCA-21	Silver	7440-22-4	E440	8.98 mg/kg	91.6	70.0	130	----
QC-2325582-003	MRCA-21	Sodium	7440-23-5	E440	1770 mg/kg	109	70.0	130	----
QC-2325582-003	MRCA-21	Strontium	7440-24-6	E440	41 mg/kg	92.4	70.0	130	----
QC-2325582-003	MRCA-21	Sulfur	7704-34-9	E440	3940 mg/kg	89.6	50.0	150	----
QC-2325582-003	MRCA-21	Thallium	7440-28-0	E440	0.907 mg/kg	94.2	70.0	130	----
QC-2325582-003	MRCA-21	Tin	7440-31-5	E440	3.79 mg/kg	93.3	40.0	160	----
QC-2325582-003	MRCA-21	Titanium	7440-32-6	E440	2790 mg/kg	103	70.0	130	----
QC-2325582-003	MRCA-21	Tungsten	7440-33-7	E440	6.99 mg/kg	104	70.0	130	----
QC-2325582-003	MRCA-21	Uranium	7440-61-1	E440	3.97 mg/kg	97.4	70.0	130	----
QC-2325582-003	MRCA-21	Vanadium	7440-62-2	E440	66.2 mg/kg	96.8	70.0	130	----

Page : 14 of 14  
 Work Order : VA25C9471  
 Client : Veolia Environmental Services Canada  
 Project : Veolia Weekly Bottom Ash-Suite



Sub-Matrix:

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
							Low	High	
<b>Metals (QCLot: 2325582) - continued</b>									
QC-2325582-003	MRCA-21	Zinc	7440-66-6	E440	828 mg/kg	98.0	70.0	130	----
QC-2325582-003	MRCA-21	Zirconium	7440-67-7	E440	6.91 mg/kg	101	70.0	130	----



<b>Report To</b>	<b>Report Format / Distribution</b>	<b>Service Requested</b> (Rush for routine analysis subject to availability)
Company: Veolia Canada / Burnaby Waste To Energy Facility	"Veolia Email Distribution List" please	
Contact: Brian Graham / Darcie Grace		
Address: 5150 Riverbend Drive Burnaby BC	Email 1: Darcie.grace@veolia.com	
	Email 2: lorenzo.ilao@veolia.com	
Phone: 604-521-1025 Fax:	Email 3: karen.thornquist@veolia.com	<b>Analysis Request</b>
	prent.kirkpatrick@metrovancover.org	
	Sarah.Wellman@metrovancover.org	

<b>Invoice To</b> Same as Report? Veolia Water Canada	<b>Client / Project Information</b>	Please indicate below Filtered, Preserved or both (F, P, F/P)																				
Hardcopy of Invoice with Report?	Job #: Veolia Weekly Bottom Ash - Suite	MET-TCLP-VA (all metals, Hg)	MOISTURE	Chrome 6	MET-CSR+FULL-VA (all metals)																	
Company: Veolia Water Canada / Burnaby Waste To Energy	PO / AFE: PO#																					
Contact: Danny George, Purchaser/Darcie Grace, SHE Manager	LSD: (includes 2:1 pH)																					
Address: 5150 Riverbend Drive, Burnaby BC V3N 4V3																						
Phone: 604 521 1025 Fax:	Quote #:																					

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	MET-TCLP-VA (all metals, Hg)	MOISTURE	Chrome 6	MET-CSR+FULL-VA (all metals)											Number of Containers	
	BA 2544-A-1	26 Oct - 1 Nov	12:00	Soil	X	X		X												1
	BA 2544-A-2	26 Oct - 1 Nov	12:00	Soil	X	X		X												1
	BA 2544-A-3	26 Oct - 1 Nov	12:00	Soil	X	X		X												1
	BA 2544-A-4	26 Oct - 1 Nov	12:00	Soil	X	X		X												1
	BA 2544-A-5	26 Oct - 1 Nov	12:00	Soil	X	X		X												1
	BA 2544-A-6	26 Oct - 1 Nov	12:00	Soil	X	X		X												1
	BA 2544-A-7	26 Oct - 1 Nov	12:00	Soil	X	X		X												1
	BA 2544-A-8	26 Oct - 1 Nov	12:00	Soil	X	X		X												1
	BA 2544-A-9	26 Oct - 1 Nov	12:00	Soil	X	X		X												1
	BA 2544-A-10	26 Oct - 1 Nov	12:00	Soil	X	X		X												1
	BA 2544-A-11	26 Oct - 1 Nov	12:00	Soil	X	X		X												1
	BA 2544-A-12	26 Oct - 1 Nov	12:00	Soil	X	X		X												1

Environmental Division  
 Vancouver  
 Work Order Reference  
**VA25C9471**

Telephone : +1 604 253 4188

<b>Water Aquatic</b>																				
<b>Form may delay dates with the Ter numbers and</b>																				

SHIPMENT RECEPTION (lab use only)					SHIPMENT VERIFICATION (lab use only)					
Released by:	Date (dd-mmm-yy): 03/11/25	Time (hh:mm): 13:30	Received by:	Date: 4 Nov 25	Time: 12:20 pm	Temperature: 20 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

Bottom Ash Sampling

**Bottom Ash Worksheet**

Date sample composited (DD/MM/YYYY)	Oct 26 - Nov 1
Person doing the sampling	Steve McNutt Eduardo Anguiano
Total Sample Weight before processing, kg	24.43 Kg
Weight of Material >3/8", kg	4.73 kg
Weight of Material that cannot be processed to <3/8" (metal, wood, etc); kg	3.72 kg
Final Total weight of Processed Bottom Ash, kg	19.7 kg

**Return this form with the filled Weekly Bottom Ash Composite Sample containers**

**Fill twelve bags with approximately 2000g of mixed bottom ash and label each with "Bottom Ash" and the week the ash composite is from, i.e. "June 9-15, 2019"**