

Bottom Ash Data

2025 Week 03

The following analytical report represents bottom ash composite results for week 03 of 2025 (January 12, 2025 to January 18, 2025).

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

CERTIFICATE OF ANALYSIS

Work Order	: VA25A1369		
Client	: Reworld Renewable Burnaby, ULC	Laboratory	: ALS Environmental - Vancouver
Contact	: Nicole Victor	Account Manager	: Gulraj Dhanaua
Address	: 5150 Riverbend Drive Burnaby British Columbia Canada V3N 4V3	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: Weekly Bottom Ash - Suite	Date Samples Received	: 21-Jan-2025 11:40
PO	: VANCO0000052919	Date Analysis Commenced	: 22-Jan-2025
C-O-C number	: ----	Issue Date	: 28-Jan-2025 09:43
Sampler	: ----		
Site	: ----		
Quote number	: Covanta Burnaby Standing Offer 2024		
No. of samples received	: 12		
No. of samples analysed	: 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>
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, 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).

Unit	Description
%	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)

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2503-A-1- Unprocessed	BA2503-A-2- Unprocessed	BA2503-A-3- Unprocessed	BA2503-A-4- Unprocessed	BA2503-A-5- Unprocessed
Client sampling date / time					12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25A1369-001	VA25A1369-002	VA25A1369-003	VA25A1369-004	VA25A1369-005	
					Result	Result	Result	Result	Result	
Physical Tests										
Moisture	----	E144/VA	0.25	%	28.5	24.1	25.9	25.0	25.3	
pH (1:2 soil:water)	----	E108/VA	0.10	pH units	10.2	10.3	10.3	10.3	10.3	
Metals										
Aluminum	7429-90-5	E440/VA	50	mg/kg	56500	46300	40600	50800	52100	
Antimony	7440-36-0	E440/VA	0.10	mg/kg	91.1	81.1	86.8	91.7	83.0	
Arsenic	7440-38-2	E440/VA	0.10	mg/kg	8.07	8.47	8.78	10.8	9.00	
Barium	7440-39-3	E440/VA	0.50	mg/kg	646	616	558	555	518	
Beryllium	7440-41-7	E440/VA	0.10	mg/kg	0.36	1.01	0.34	0.28	0.30	
Bismuth	7440-69-9	E440/VA	0.20	mg/kg	6.84	5.40	6.42	8.11	5.89	
Boron	7440-42-8	E440/VA	5.0	mg/kg	226	168	170	179	214	
Cadmium	7440-43-9	E440/VA	0.020	mg/kg	6.47	5.82	6.03	6.08	6.96	
Calcium	7440-70-2	E440/VA	50	mg/kg	122000	118000	112000	126000	118000	
Chromium	7440-47-3	E440/VA	0.50	mg/kg	229	114	118	177	160	
Cobalt	7440-48-4	E440/VA	0.10	mg/kg	442	154	255	316	91.7	
Copper	7440-50-8	E440/VA	0.50	mg/kg	2710	1680	9180	3250	2140	
Iron	7439-89-6	E440/VA	50	mg/kg	101000	83300	79400	62000	73800	
Lead	7439-92-1	E440/VA	0.50	mg/kg	237	384	367	276	298	
Lithium	7439-93-2	E440/VA	2.0	mg/kg	34.1	44.5	51.7	68.7	32.0	
Magnesium	7439-95-4	E440/VA	20	mg/kg	12300	11100	10600	11100	10700	
Manganese	7439-96-5	E440/VA	1.0	mg/kg	1110	785	1050	1080	805	
Mercury	7439-97-6	E510/VA	0.0500	mg/kg	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	



Analytical Results

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

					Client sample ID	BA2503-A-1- Unprocessed	BA2503-A-2- Unprocessed	BA2503-A-3- Unprocessed	BA2503-A-4- Unprocessed	BA2503-A-5- Unprocessed
					Client sampling date / time	12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00
Analyte	CAS Number	Method/Lab	LOR	Unit		VA25A1369-001	VA25A1369-002	VA25A1369-003	VA25A1369-004	VA25A1369-005
						Result	Result	Result	Result	Result
Metals										
Molybdenum	7439-98-7	E440/VA	0.10	mg/kg		18.6	12.7	14.3	16.9	13.6
Nickel	7440-02-0	E440/VA	0.50	mg/kg		214	221	158	223	146
Phosphorus	7723-14-0	E440/VA	50	mg/kg		9780	11300	9530	12800	12300
Potassium	7440-09-7	E440/VA	100	mg/kg		5420	5570	5780	5390	5380
Selenium	7782-49-2	E440/VA	0.20	mg/kg		0.32	0.37	0.37	0.34	0.31
Silver	7440-22-4	E440/VA	0.10	mg/kg		20.4	4.07	9.23	4.02	4.62
Sodium	7440-23-5	E440/VA	50	mg/kg		18900	18600	18700	17700	17500
Strontium	7440-24-6	E440/VA	0.50	mg/kg		279	262	300	543	271
Sulfur	7704-34-9	E440/VA	1000	mg/kg		9700	9900	10700	10400	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		240	114	180	104	121
Titanium	7440-32-6	E440/VA	1.0	mg/kg		372	270	218	294	271
Tungsten	7440-33-7	E440/VA	0.50	mg/kg		4.28	3.06	5.80	4.65	3.27
Uranium	7440-61-1	E440/VA	0.050	mg/kg		1.45	1.37	1.46	1.60	1.40
Vanadium	7440-62-2	E440/VA	0.20	mg/kg		27.2	23.9	24.4	28.8	26.2
Zinc	7440-66-6	E440/VA	2.0	mg/kg		3580	3750	3280	5610	2660
Zirconium	7440-67-7	E440/VA	1.0	mg/kg		3.4	3.5	4.0	5.2	4.5
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444/VA	0.010	pH units		11.3	11.3	11.3	11.3	11.4
pH, TCLP 2nd preliminary	----	EPP444/VA	0.010	pH units		5.62	5.48	5.53	5.60	5.91
pH, TCLP extraction fluid initial	----	EPP444/VA	0.010	pH units		2.92	2.92	2.92	2.92	2.92



Analytical Results

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

					Client sample ID	BA2503-A-1- Unprocessed	BA2503-A-2- Unprocessed	BA2503-A-3- Unprocessed	BA2503-A-4- Unprocessed	BA2503-A-5- Unprocessed
					Client sampling date / time	12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00
Analyte	CAS Number	Method/Lab	LOR	Unit		VA25A1369-001	VA25A1369-002	VA25A1369-003	VA25A1369-004	VA25A1369-005
						Result	Result	Result	Result	Result
TCLP Metals										
pH, TCLP final	----	EPP444/VA	0.010	pH units		6.38	6.02	6.13	6.03	6.16
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		1.74	1.75	1.90	1.71	1.84
Cadmium, TCLP	7440-43-9	E444/VA	0.050	mg/L		0.075	0.107	0.127	0.099	0.102
Calcium, TCLP	7440-70-2	E444/VA	10	mg/L		1790	1830	1980	1840	1810
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		1.70	1.44	1.31	1.60	0.965
Copper, TCLP	7440-50-8	E444/VA	0.050	mg/L		1.00	1.07	1.78	2.03	1.91
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	4.59	<0.25	<0.25	<0.25
Magnesium, TCLP	7439-95-4	E444/VA	2.5	mg/L		99.6	112	113	108	98.8
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		0.38	0.48	0.37	0.68	0.41
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	BA2503-A-1- Unprocessed	BA2503-A-2- Unprocessed	BA2503-A-3- Unprocessed	BA2503-A-4- Unprocessed	BA2503-A-5- Unprocessed
					Client sampling date / time	12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00
Analyte	CAS Number	Method/Lab	LOR	Unit		VA25A1369-001	VA25A1369-002	VA25A1369-003	VA25A1369-004	VA25A1369-005
						Result	Result	Result	Result	Result
TCLP Metals										
Zinc, TCLP	7440-66-6	E444/VA	0.50	mg/L		20.9	41.5	29.6	52.6	49.9
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 result qualifiers detected.

Analytical Results

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

					Client sample ID	BA2503-A-6- Unprocessed	BA2503-A-7- Unprocessed	BA2503-A-8- Unprocessed	BA2503-A-9- Unprocessed	BA2503-A-10- Unprocessed
					Client sampling date / time	12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00
Analyte	CAS Number	Method/Lab	LOR	Unit		VA25A1369-006	VA25A1369-007	VA25A1369-008	VA25A1369-009	VA25A1369-010
						Result	Result	Result	Result	Result
Physical Tests										
Moisture	----	E144/VA	0.25	%		25.4	26.7	25.9	26.6	23.8
pH (1:2 soil:water)	----	E108/VA	0.10	pH units		10.3	10.3	10.3	10.3	10.3
Metals										
Aluminum	7429-90-5	E440/VA	50	mg/kg		54000	58500	51900	41600	36200
Antimony	7440-36-0	E440/VA	0.10	mg/kg		95.4	96.8	110	111	100
Arsenic	7440-38-2	E440/VA	0.10	mg/kg		9.18	14.7	8.16	9.83	8.48
Barium	7440-39-3	E440/VA	0.50	mg/kg		506	615	523	569	643
Beryllium	7440-41-7	E440/VA	0.10	mg/kg		2.03	0.31	0.35	0.32	0.35
Bismuth	7440-69-9	E440/VA	0.20	mg/kg		6.72	7.12	8.20	6.27	6.49
Boron	7440-42-8	E440/VA	5.0	mg/kg		213	231	155	202	203
Cadmium	7440-43-9	E440/VA	0.020	mg/kg		9.07	8.67	7.21	8.34	12.8
Calcium	7440-70-2	E440/VA	50	mg/kg		130000	130000	131000	137000	134000



Analytical Results

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

					Client sample ID	BA2503-A-6- Unprocessed	BA2503-A-7- Unprocessed	BA2503-A-8- Unprocessed	BA2503-A-9- Unprocessed	BA2503-A-10- Unprocessed
					Client sampling date / time	12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00
Analyte	CAS Number	Method/Lab	LOR	Unit		VA25A1369-006	VA25A1369-007	VA25A1369-008	VA25A1369-009	VA25A1369-010
						Result	Result	Result	Result	Result
Metals										
Chromium	7440-47-3	E440/VA	0.50	mg/kg		161	156	261	127	219
Cobalt	7440-48-4	E440/VA	0.10	mg/kg		62.7	84.8	56.9	264	116
Copper	7440-50-8	E440/VA	0.50	mg/kg		2090	2400	1920	4670	3110
Iron	7439-89-6	E440/VA	50	mg/kg		72400	58600	78600	74700	67700
Lead	7439-92-1	E440/VA	0.50	mg/kg		940	370	740	794	409
Lithium	7439-93-2	E440/VA	2.0	mg/kg		35.5	39.0	34.8	36.5	39.8
Magnesium	7439-95-4	E440/VA	20	mg/kg		12500	12300	12100	11900	13100
Manganese	7439-96-5	E440/VA	1.0	mg/kg		926	1120	1350	858	1050
Mercury	7439-97-6	E510/VA	0.0500	mg/kg		<0.0500	<0.0500	<0.0500	<0.0500	<0.0500
Molybdenum	7439-98-7	E440/VA	0.10	mg/kg		20.6	17.5	20.2	15.0	16.1
Nickel	7440-02-0	E440/VA	0.50	mg/kg		206	216	443	144	3820
Phosphorus	7723-14-0	E440/VA	50	mg/kg		12100	11000	10700	15400	11000
Potassium	7440-09-7	E440/VA	100	mg/kg		6050	6060	5900	5540	5620
Selenium	7782-49-2	E440/VA	0.20	mg/kg		0.42	0.39	0.41	0.36	0.33
Silver	7440-22-4	E440/VA	0.10	mg/kg		4.09	>25.8	5.11	4.54	5.83
Sodium	7440-23-5	E440/VA	50	mg/kg		19300	19300	19000	19400	19000
Strontium	7440-24-6	E440/VA	0.50	mg/kg		323	309	313	324	316
Sulfur	7704-34-9	E440/VA	1000	mg/kg		11800	11300	11000	12300	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		121	206	149	124	170
Titanium	7440-32-6	E440/VA	1.0	mg/kg		268	321	283	238	205



Analytical Results

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

					Client sample ID	BA2503-A-6- Unprocessed	BA2503-A-7- Unprocessed	BA2503-A-8- Unprocessed	BA2503-A-9- Unprocessed	BA2503-A-10- Unprocessed
					Client sampling date / time	12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00
Analyte	CAS Number	Method/Lab	LOR	Unit		VA25A1369-006	VA25A1369-007	VA25A1369-008	VA25A1369-009	VA25A1369-010
						Result	Result	Result	Result	Result
Metals										
Tungsten	7440-33-7	E440/VA	0.50	mg/kg		3.05	7.43	3.10	3.28	8.23
Uranium	7440-61-1	E440/VA	0.050	mg/kg		1.58	1.56	1.44	1.60	1.50
Vanadium	7440-62-2	E440/VA	0.20	mg/kg		27.1	26.6	28.8	26.2	24.6
Zinc	7440-66-6	E440/VA	2.0	mg/kg		3980	3810	3330	3570	2850
Zirconium	7440-67-7	E440/VA	1.0	mg/kg		5.1	4.3	3.5	3.1	8.2
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444/VA	0.010	pH units		11.4	11.3	11.3	11.3	11.3
pH, TCLP 2nd preliminary	----	EPP444/VA	0.010	pH units		5.95	5.78	5.70	5.26	5.80
pH, TCLP extraction fluid initial	----	EPP444/VA	0.010	pH units		2.92	2.92	2.92	2.92	2.92
pH, TCLP final	----	EPP444/VA	0.010	pH units		6.33	6.10	6.27	6.22	6.22
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		1.76	1.72	1.66	1.73	1.80
Cadmium, TCLP	7440-43-9	E444/VA	0.050	mg/L		0.161	0.110	0.075	0.129	0.152
Calcium, TCLP	7440-70-2	E444/VA	10	mg/L		1820	1870	1760	1800	2010
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		0.947	2.49	1.38	0.908	1.73
Copper, TCLP	7440-50-8	E444/VA	0.050	mg/L		1.24	1.09	0.972	1.16	1.87
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	BA2503-A-6- Unprocessed	BA2503-A-7- Unprocessed	BA2503-A-8- Unprocessed	BA2503-A-9- Unprocessed	BA2503-A-10- Unprocessed
					Client sampling date / time	12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00	12-Jan-2025 09:00
Analyte	CAS Number	Method/Lab	LOR	Unit		VA25A1369-006	VA25A1369-007	VA25A1369-008	VA25A1369-009	VA25A1369-010
						Result	Result	Result	Result	Result
TCLP Metals										
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		99.8	111	101	102	111
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		0.54	0.65	0.43	0.49	0.52
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		68.6	62.2	20.5	26.3	29.3
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 result qualifiers detected.

Analytical Results

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

					Client sample ID	BA2503-A-11- Unprocessed	BA2503-A-12- Unprocessed	----	----	----
					Client sampling date / time	12-Jan-2025 09:00	12-Jan-2025 09:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		VA25A1369-011	VA25A1369-012	----	----	----
						Result	Result	----	----	----
Physical Tests										
Moisture	----	E144/VA	0.25	%		27.4	26.2	----	----	----
pH (1:2 soil:water)	----	E108/VA	0.10	pH units		10.2	10.3	----	----	----



Analytical Results

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

					Client sample ID	BA2503-A-11- Unprocessed	BA2503-A-12- Unprocessed	----	----	----
					Client sampling date / time	12-Jan-2025 09:00	12-Jan-2025 09:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25A1369-011	VA25A1369-012	----	----	----	----
					Result	Result	----	----	----	----
Metals										
Aluminum	7429-90-5	E440/VA	50	mg/kg	51200	39000	----	----	----	----
Antimony	7440-36-0	E440/VA	0.10	mg/kg	99.5	95.8	----	----	----	----
Arsenic	7440-38-2	E440/VA	0.10	mg/kg	9.66	8.54	----	----	----	----
Barium	7440-39-3	E440/VA	0.50	mg/kg	539	517	----	----	----	----
Beryllium	7440-41-7	E440/VA	0.10	mg/kg	0.32	0.35	----	----	----	----
Bismuth	7440-69-9	E440/VA	0.20	mg/kg	6.17	9.99	----	----	----	----
Boron	7440-42-8	E440/VA	5.0	mg/kg	223	171	----	----	----	----
Cadmium	7440-43-9	E440/VA	0.020	mg/kg	6.34	13.6	----	----	----	----
Calcium	7440-70-2	E440/VA	50	mg/kg	122000	127000	----	----	----	----
Chromium	7440-47-3	E440/VA	0.50	mg/kg	394	140	----	----	----	----
Cobalt	7440-48-4	E440/VA	0.10	mg/kg	172	566	----	----	----	----
Copper	7440-50-8	E440/VA	0.50	mg/kg	2160	14600	----	----	----	----
Iron	7439-89-6	E440/VA	50	mg/kg	64500	68900	----	----	----	----
Lead	7439-92-1	E440/VA	0.50	mg/kg	527	837	----	----	----	----
Lithium	7439-93-2	E440/VA	2.0	mg/kg	89.2	47.8	----	----	----	----
Magnesium	7439-95-4	E440/VA	20	mg/kg	11300	11100	----	----	----	----
Manganese	7439-96-5	E440/VA	1.0	mg/kg	907	817	----	----	----	----
Mercury	7439-97-6	E510/VA	0.0500	mg/kg	<0.0500	<0.0500	----	----	----	----
Molybdenum	7439-98-7	E440/VA	0.10	mg/kg	20.6	19.4	----	----	----	----
Nickel	7440-02-0	E440/VA	0.50	mg/kg	327	331	----	----	----	----
Phosphorus	7723-14-0	E440/VA	50	mg/kg	10000	10900	----	----	----	----



Analytical Results

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

					Client sample ID	BA2503-A-11- Unprocessed	BA2503-A-12- Unprocessed	----	----	----
					Client sampling date / time	12-Jan-2025 09:00	12-Jan-2025 09:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25A1369-011	VA25A1369-012	----	----	----	----
					Result	Result	----	----	----	----
Metals										
Potassium	7440-09-7	E440/VA	100	mg/kg	5780	6010	----	----	----	----
Selenium	7782-49-2	E440/VA	0.20	mg/kg	0.32	0.33	----	----	----	----
Silver	7440-22-4	E440/VA	0.10	mg/kg	6.11	6.44	----	----	----	----
Sodium	7440-23-5	E440/VA	50	mg/kg	17300	19800	----	----	----	----
Strontium	7440-24-6	E440/VA	0.50	mg/kg	306	298	----	----	----	----
Sulfur	7704-34-9	E440/VA	1000	mg/kg	11000	11000	----	----	----	----
Thallium	7440-28-0	E440/VA	0.050	mg/kg	<0.050	<0.050	----	----	----	----
Tin	7440-31-5	E440/VA	2.0	mg/kg	142	132	----	----	----	----
Titanium	7440-32-6	E440/VA	1.0	mg/kg	266	270	----	----	----	----
Tungsten	7440-33-7	E440/VA	0.50	mg/kg	2.85	3.08	----	----	----	----
Uranium	7440-61-1	E440/VA	0.050	mg/kg	1.52	1.54	----	----	----	----
Vanadium	7440-62-2	E440/VA	0.20	mg/kg	27.8	25.4	----	----	----	----
Zinc	7440-66-6	E440/VA	2.0	mg/kg	7380	3880	----	----	----	----
Zirconium	7440-67-7	E440/VA	1.0	mg/kg	4.9	3.8	----	----	----	----
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444/VA	0.010	pH units	11.3	11.4	----	----	----	----
pH, TCLP 2nd preliminary	----	EPP444/VA	0.010	pH units	5.51	5.41	----	----	----	----
pH, TCLP extraction fluid initial	----	EPP444/VA	0.010	pH units	2.92	2.92	----	----	----	----
pH, TCLP final	----	EPP444/VA	0.010	pH units	6.19	6.14	----	----	----	----
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	BA2503-A-11- Unprocessed	BA2503-A-12- Unprocessed	----	----	----
					Client sampling date / time	12-Jan-2025 09:00	12-Jan-2025 09:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25A1369-011	VA25A1369-012	----	----	----	----
					Result	Result	----	----	----	----
TCLP Metals										
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	1.77	1.87	----	----	----	----
Cadmium, TCLP	7440-43-9	E444/VA	0.050	mg/L	0.074	0.101	----	----	----	----
Calcium, TCLP	7440-70-2	E444/VA	10	mg/L	1780	2080	----	----	----	----
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	1.89	1.66	----	----	----	----
Copper, TCLP	7440-50-8	E444/VA	0.050	mg/L	0.991	1.67	----	----	----	----
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	0.45	----	----	----	----
Magnesium, TCLP	7439-95-4	E444/VA	2.5	mg/L	106	115	----	----	----	----
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	1.07	0.44	----	----	----	----
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	28.2	31.5	----	----	----	----
Zirconium, TCLP	7440-67-7	E444/VA	10	mg/L	<10	<10	----	----	----	----

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA25A1369	Page	: 1 of 16
Client	: Reworld Renewable Burnaby, ULC	Laboratory	: ALS Environmental - Vancouver
Contact	: Nicole Victor	Account Manager	: Gulraj Dhanaua
Address	: 5150 Riverbend Drive Burnaby BC Canada V3N 4V3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: Weekly Bottom Ash - Suite	Date Samples Received	: 21-Jan-2025 11:40
PO	: VANCO0000052919	Issue Date	: 28-Jan-2025 09:43
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: Covanta Burnaby Standing Offer 2024		
No. of samples received	: 12		
No. of samples analysed	: 12		

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
Duplicate (DUP) RPDs								
Metals	VA25A1369-001	BA2503-A-1-Unprocessed	Cobalt	7440-48-4	E440	94.0 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA25A1369-001	BA2503-A-1-Unprocessed	Iron	7439-89-6	E440	44.1 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA25A1369-001	BA2503-A-1-Unprocessed	Lead	7439-92-1	E440	49.3 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.
Metals	VA25A1369-001	BA2503-A-1-Unprocessed	Nickel	7440-02-0	E440	57.2 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA25A1369-001	BA2503-A-1-Unprocessed	Silver	7440-22-4	E440	119 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.
Metals	VA25A1369-001	BA2503-A-1-Unprocessed	Strontium	7440-24-6	E440	90.8 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.
Metals	VA25A1369-001	BA2503-A-1-Unprocessed	Tin	7440-31-5	E440	53.2 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.

Result Qualifiers

Qualifier Description

DUP-H Duplicate results outside ALS DQO, due to sample heterogeneity.



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	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2503-A-10-Unprocessed	E510	12-Jan-2025	23-Jan-2025	28 days	11 days	✓	23-Jan-2025	28 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2503-A-11-Unprocessed	E510	12-Jan-2025	23-Jan-2025	28 days	11 days	✓	23-Jan-2025	28 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2503-A-12-Unprocessed	E510	12-Jan-2025	23-Jan-2025	28 days	11 days	✓	23-Jan-2025	28 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2503-A-1-Unprocessed	E510	12-Jan-2025	23-Jan-2025	28 days	11 days	✓	23-Jan-2025	28 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2503-A-2-Unprocessed	E510	12-Jan-2025	23-Jan-2025	28 days	11 days	✓	23-Jan-2025	28 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2503-A-3-Unprocessed	E510	12-Jan-2025	23-Jan-2025	28 days	11 days	✓	23-Jan-2025	28 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2503-A-4-Unprocessed	E510	12-Jan-2025	23-Jan-2025	28 days	11 days	✓	23-Jan-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	
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2503-A-5-Unprocessed	E510	12-Jan-2025	23-Jan-2025	28 days	11 days	✓	23-Jan-2025	28 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2503-A-6-Unprocessed	E510	12-Jan-2025	23-Jan-2025	28 days	11 days	✓	23-Jan-2025	28 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2503-A-7-Unprocessed	E510	12-Jan-2025	23-Jan-2025	28 days	11 days	✓	23-Jan-2025	28 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2503-A-8-Unprocessed	E510	12-Jan-2025	23-Jan-2025	28 days	11 days	✓	23-Jan-2025	28 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2503-A-9-Unprocessed	E510	12-Jan-2025	23-Jan-2025	28 days	11 days	✓	23-Jan-2025	28 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2503-A-10-Unprocessed	E440	12-Jan-2025	23-Jan-2025	180 days	11 days	✓	24-Jan-2025	180 days	12 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2503-A-11-Unprocessed	E440	12-Jan-2025	23-Jan-2025	180 days	11 days	✓	24-Jan-2025	180 days	12 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2503-A-12-Unprocessed	E440	12-Jan-2025	23-Jan-2025	180 days	11 days	✓	24-Jan-2025	180 days	12 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2503-A-1-Unprocessed	E440	12-Jan-2025	23-Jan-2025	180 days	11 days	✓	24-Jan-2025	180 days	12 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	
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2503-A-2-Unprocessed	E440	12-Jan-2025	23-Jan-2025	180 days	11 days	✓	24-Jan-2025	180 days	12 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2503-A-3-Unprocessed	E440	12-Jan-2025	23-Jan-2025	180 days	11 days	✓	24-Jan-2025	180 days	12 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2503-A-4-Unprocessed	E440	12-Jan-2025	23-Jan-2025	180 days	11 days	✓	24-Jan-2025	180 days	12 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2503-A-5-Unprocessed	E440	12-Jan-2025	23-Jan-2025	180 days	11 days	✓	24-Jan-2025	180 days	12 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2503-A-6-Unprocessed	E440	12-Jan-2025	23-Jan-2025	180 days	11 days	✓	24-Jan-2025	180 days	12 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2503-A-7-Unprocessed	E440	12-Jan-2025	23-Jan-2025	180 days	11 days	✓	24-Jan-2025	180 days	12 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2503-A-8-Unprocessed	E440	12-Jan-2025	23-Jan-2025	180 days	11 days	✓	24-Jan-2025	180 days	12 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2503-A-9-Unprocessed	E440	12-Jan-2025	23-Jan-2025	180 days	11 days	✓	24-Jan-2025	180 days	12 days	✓
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2503-A-10-Unprocessed	E144	12-Jan-2025	----	----	----		22-Jan-2025	----	10 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	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2503-A-11-Unprocessed	E144	12-Jan-2025	----	----	----		22-Jan-2025	----	10 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2503-A-12-Unprocessed	E144	12-Jan-2025	----	----	----		22-Jan-2025	----	10 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2503-A-1-Unprocessed	E144	12-Jan-2025	----	----	----		22-Jan-2025	----	10 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2503-A-2-Unprocessed	E144	12-Jan-2025	----	----	----		22-Jan-2025	----	10 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2503-A-3-Unprocessed	E144	12-Jan-2025	----	----	----		22-Jan-2025	----	10 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2503-A-4-Unprocessed	E144	12-Jan-2025	----	----	----		22-Jan-2025	----	10 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2503-A-5-Unprocessed	E144	12-Jan-2025	----	----	----		22-Jan-2025	----	10 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2503-A-6-Unprocessed	E144	12-Jan-2025	----	----	----		22-Jan-2025	----	10 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2503-A-7-Unprocessed	E144	12-Jan-2025	----	----	----		22-Jan-2025	----	10 days	



Matrix: Soil/Solid

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

Analyte Group : Analytical Method	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2503-A-8-Unprocessed	E144	12-Jan-2025	----	----	----		22-Jan-2025	----	10 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2503-A-9-Unprocessed	E144	12-Jan-2025	----	----	----		22-Jan-2025	----	10 days	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2503-A-10-Unprocessed	E108	12-Jan-2025	23-Jan-2025	30 days	11 days	✓	23-Jan-2025	30 days	11 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2503-A-11-Unprocessed	E108	12-Jan-2025	23-Jan-2025	30 days	11 days	✓	23-Jan-2025	30 days	11 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2503-A-12-Unprocessed	E108	12-Jan-2025	23-Jan-2025	30 days	11 days	✓	23-Jan-2025	30 days	11 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2503-A-1-Unprocessed	E108	12-Jan-2025	23-Jan-2025	30 days	11 days	✓	23-Jan-2025	30 days	11 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2503-A-2-Unprocessed	E108	12-Jan-2025	23-Jan-2025	30 days	11 days	✓	23-Jan-2025	30 days	11 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2503-A-3-Unprocessed	E108	12-Jan-2025	23-Jan-2025	30 days	11 days	✓	23-Jan-2025	30 days	11 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2503-A-4-Unprocessed	E108	12-Jan-2025	23-Jan-2025	30 days	11 days	✓	23-Jan-2025	30 days	11 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	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2503-A-5-Unprocessed	E108	12-Jan-2025	23-Jan-2025	30 days	11 days	✓	23-Jan-2025	30 days	11 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2503-A-6-Unprocessed	E108	12-Jan-2025	23-Jan-2025	30 days	11 days	✓	23-Jan-2025	30 days	11 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2503-A-7-Unprocessed	E108	12-Jan-2025	23-Jan-2025	30 days	11 days	✓	23-Jan-2025	30 days	11 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2503-A-8-Unprocessed	E108	12-Jan-2025	23-Jan-2025	30 days	11 days	✓	23-Jan-2025	30 days	11 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2503-A-9-Unprocessed	E108	12-Jan-2025	23-Jan-2025	30 days	11 days	✓	23-Jan-2025	30 days	11 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2503-A-10-Unprocessed	E512	24-Jan-2025	27-Jan-2025	40 days	15 days	✓	27-Jan-2025	40 days	15 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2503-A-11-Unprocessed	E512	24-Jan-2025	27-Jan-2025	40 days	15 days	✓	27-Jan-2025	40 days	15 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2503-A-12-Unprocessed	E512	24-Jan-2025	27-Jan-2025	40 days	15 days	✓	27-Jan-2025	40 days	15 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2503-A-1-Unprocessed	E512	24-Jan-2025	27-Jan-2025	40 days	15 days	✓	27-Jan-2025	40 days	15 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	
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2503-A-2-Unprocessed	E512	24-Jan-2025	27-Jan-2025	40 days	15 days	✓	27-Jan-2025	40 days	15 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2503-A-3-Unprocessed	E512	24-Jan-2025	27-Jan-2025	40 days	15 days	✓	27-Jan-2025	40 days	15 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2503-A-4-Unprocessed	E512	24-Jan-2025	27-Jan-2025	40 days	15 days	✓	27-Jan-2025	40 days	15 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2503-A-5-Unprocessed	E512	24-Jan-2025	27-Jan-2025	40 days	15 days	✓	27-Jan-2025	40 days	15 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2503-A-6-Unprocessed	E512	24-Jan-2025	27-Jan-2025	40 days	15 days	✓	27-Jan-2025	40 days	15 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2503-A-7-Unprocessed	E512	24-Jan-2025	27-Jan-2025	40 days	15 days	✓	27-Jan-2025	40 days	15 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2503-A-8-Unprocessed	E512	24-Jan-2025	27-Jan-2025	40 days	15 days	✓	27-Jan-2025	40 days	15 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2503-A-9-Unprocessed	E512	24-Jan-2025	27-Jan-2025	40 days	15 days	✓	27-Jan-2025	40 days	15 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2503-A-10-Unprocessed	E444	24-Jan-2025	27-Jan-2025	192 days	15 days	✓	28-Jan-2025	192 days	16 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	
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2503-A-11-Unprocessed	E444	24-Jan-2025	27-Jan-2025	192 days	15 days	✓	28-Jan-2025	192 days	16 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2503-A-12-Unprocessed	E444	24-Jan-2025	27-Jan-2025	192 days	15 days	✓	28-Jan-2025	192 days	16 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2503-A-1-Unprocessed	E444	24-Jan-2025	27-Jan-2025	192 days	15 days	✓	28-Jan-2025	192 days	16 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2503-A-2-Unprocessed	E444	24-Jan-2025	27-Jan-2025	192 days	15 days	✓	28-Jan-2025	192 days	16 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2503-A-3-Unprocessed	E444	24-Jan-2025	27-Jan-2025	192 days	15 days	✓	28-Jan-2025	192 days	16 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2503-A-4-Unprocessed	E444	24-Jan-2025	27-Jan-2025	192 days	15 days	✓	28-Jan-2025	192 days	16 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2503-A-5-Unprocessed	E444	24-Jan-2025	27-Jan-2025	192 days	15 days	✓	28-Jan-2025	192 days	16 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2503-A-6-Unprocessed	E444	24-Jan-2025	27-Jan-2025	192 days	15 days	✓	28-Jan-2025	192 days	16 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2503-A-7-Unprocessed	E444	24-Jan-2025	27-Jan-2025	192 days	15 days	✓	28-Jan-2025	192 days	16 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	
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2503-A-8-Unprocessed	E444	24-Jan-2025	27-Jan-2025	192 days	15 days	✓	28-Jan-2025	192 days	16 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2503-A-9-Unprocessed	E444	24-Jan-2025	27-Jan-2025	192 days	15 days	✓	28-Jan-2025	192 days	16 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2503-A-10-Unprocessed	EPP444	12-Jan-2025	24-Jan-2025	----	----		----	28 days	12 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2503-A-11-Unprocessed	EPP444	12-Jan-2025	24-Jan-2025	----	----		----	28 days	12 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2503-A-12-Unprocessed	EPP444	12-Jan-2025	24-Jan-2025	----	----		----	28 days	12 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2503-A-1-Unprocessed	EPP444	12-Jan-2025	24-Jan-2025	----	----		----	28 days	12 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2503-A-2-Unprocessed	EPP444	12-Jan-2025	24-Jan-2025	----	----		----	28 days	12 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2503-A-3-Unprocessed	EPP444	12-Jan-2025	24-Jan-2025	----	----		----	28 days	12 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2503-A-4-Unprocessed	EPP444	12-Jan-2025	24-Jan-2025	----	----		----	28 days	12 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	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2503-A-5-Unprocessed	EPP444	12-Jan-2025	24-Jan-2025	----	----		----	28 days	12 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2503-A-6-Unprocessed	EPP444	12-Jan-2025	24-Jan-2025	----	----		----	28 days	12 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2503-A-7-Unprocessed	EPP444	12-Jan-2025	24-Jan-2025	----	----		----	28 days	12 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2503-A-8-Unprocessed	EPP444	12-Jan-2025	24-Jan-2025	----	----		----	28 days	12 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2503-A-9-Unprocessed	EPP444	12-Jan-2025	24-Jan-2025	----	----		----	28 days	12 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Mercury by CVAAS (TCLP)	E512	1852194	1	12	8.3	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	1848576	1	12	8.3	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	1852195	1	12	8.3	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	1848577	1	12	8.3	5.0	✓
Moisture Content by Gravimetry	E144	1848578	1	12	8.3	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	1848575	1	13	7.6	5.0	✓
Laboratory Control Samples (LCS)							
Mercury in Soil/Solid by CVAAS	E510	1848576	2	12	16.6	10.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	1848577	2	12	16.6	10.0	✓
Moisture Content by Gravimetry	E144	1848578	1	12	8.3	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	1848575	1	13	7.6	5.0	✓
Method Blanks (MB)							
Mercury by CVAAS (TCLP)	E512	1852194	1	12	8.3	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	1848576	1	12	8.3	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	1852195	1	12	8.3	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	1848577	1	12	8.3	5.0	✓
Moisture Content by Gravimetry	E144	1848578	1	12	8.3	5.0	✓
Matrix Spikes (MS)							
Mercury by CVAAS (TCLP)	E512	1852194	1	12	8.3	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	1852195	1	12	8.3	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°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 HNO_3 and HCl . Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, 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 HNO_3 and 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.

Page : 16 of 16
Work Order : VA25A1369
Client : Reworld Renewable Burnaby, ULC
Project : Weekly Bottom Ash - Suite



Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 ₃ 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

Work Order	: VA25A1369	Page	: 1 of 12
Client	: Reworld Renewable Burnaby, ULC	Laboratory	: ALS Environmental - Vancouver
Contact	: Nicole Victor	Account Manager	: Gulraj Dhanaua
Address	: 5150 Riverbend Drive Burnaby BC Canada V3N 4V3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: Weekly Bottom Ash - Suite	Date Samples Received	: 21-Jan-2025 11:40
PO	: VANCO0000052919	Date Analysis Commenced	: 22-Jan-2025
C-O-C number	: ----	Issue Date	: 28-Jan-2025 09:46
Sampler	: ----		
Site	: ----		
Quote number	: Covanta Burnaby Standing Offer 2024		
No. of samples received	: 12		
No. of samples analysed	: 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.

Signatories	Position	Laboratory Department
Janice Leung	Supervisor - Organics Instrumentation	Vancouver Organics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver 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 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

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



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
Physical Tests (QC Lot: 1848575)											
VA25A1369-001	BA2503-A-1-Unprocessed	pH (1:2 soil:water)	----	E108	0.10	pH units	10.2	10.2	0.4%	5%	----
Physical Tests (QC Lot: 1848578)											
VA25A1369-001	BA2503-A-1-Unprocessed	Moisture	----	E144	0.25	%	28.5	27.0	5.33%	20%	----
Metals (QC Lot: 1848576)											
VA25A1369-001	BA2503-A-1-Unprocessed	Mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	0	Diff <2x LOR	----
Metals (QC Lot: 1848577)											
VA25A1369-001	BA2503-A-1-Unprocessed	Aluminum	7429-90-5	E440	50	mg/kg	56500	48000	16.2%	40%	----
		Antimony	7440-36-0	E440	0.10	mg/kg	91.1	85.4	6.53%	30%	----
		Arsenic	7440-38-2	E440	0.10	mg/kg	8.07	7.86	2.67%	30%	----
		Barium	7440-39-3	E440	0.50	mg/kg	646	634	1.90%	40%	----
		Beryllium	7440-41-7	E440	0.10	mg/kg	0.36	0.34	0.01	Diff <2x LOR	----
		Bismuth	7440-69-9	E440	0.20	mg/kg	6.84	6.09	11.6%	30%	----
		Boron	7440-42-8	E440	5.0	mg/kg	226	170	28.4%	30%	----
		Cadmium	7440-43-9	E440	0.020	mg/kg	6.47	6.62	2.37%	30%	----
		Calcium	7440-70-2	E440	50	mg/kg	122000	119000	2.59%	30%	----
		Chromium	7440-47-3	E440	0.50	mg/kg	229	185	21.2%	30%	----
		Cobalt	7440-48-4	E440	0.10	mg/kg	442	159	94.0%	30%	DUP-H
		Copper	7440-50-8	E440	0.50	mg/kg	2710	2270	17.6%	30%	----
		Iron	7439-89-6	E440	50	mg/kg	101000	64600	44.1%	30%	DUP-H
		Lead	7439-92-1	E440	0.50	mg/kg	237	392	49.3%	40%	DUP-H
		Lithium	7439-93-2	E440	2.0	mg/kg	34.1	42.0	20.7%	30%	----
		Magnesium	7439-95-4	E440	20	mg/kg	12300	16100	27.0%	30%	----
		Manganese	7439-96-5	E440	1.0	mg/kg	1110	829	29.1%	30%	----
		Molybdenum	7439-98-7	E440	0.10	mg/kg	18.6	15.8	16.2%	40%	----
		Nickel	7440-02-0	E440	0.50	mg/kg	214	119	57.2%	30%	DUP-H
		Phosphorus	7723-14-0	E440	50	mg/kg	9780	11100	12.8%	30%	----
		Potassium	7440-09-7	E440	100	mg/kg	5420	5730	5.60%	40%	----
		Selenium	7782-49-2	E440	0.20	mg/kg	0.32	0.39	0.06	Diff <2x LOR	----
		Silver	7440-22-4	E440	0.10	mg/kg	20.4	5.18	119%	40%	DUP-H
		Sodium	7440-23-5	E440	50	mg/kg	18900	17400	8.55%	40%	----

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 Work Order : VA25A1369
 Client : Reworld Renewable Burnaby, ULC
 Project : Weekly Bottom Ash - Suite



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
Metals (QC Lot: 1848577) - continued											
VA25A1369-001	BA2503-A-1-Unprocessed	Strontium	7440-24-6	E440	0.50	mg/kg	279	743	90.8%	40%	DUP-H
		Sulfur	7704-34-9	E440	1000	mg/kg	9700	9700	0.634%	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	240	139	53.2%	40%	DUP-H
		Titanium	7440-32-6	E440	1.0	mg/kg	372	270	31.9%	40%	----
		Tungsten	7440-33-7	E440	0.50	mg/kg	4.28	4.44	3.84%	30%	----
		Uranium	7440-61-1	E440	0.050	mg/kg	1.45	1.77	20.0%	30%	----
		Vanadium	7440-62-2	E440	0.20	mg/kg	27.2	25.2	7.61%	30%	----
		Zinc	7440-66-6	E440	2.0	mg/kg	3580	3440	3.78%	30%	----
		Zirconium	7440-67-7	E440	1.0	mg/kg	3.4	3.9	0.5	Diff <2x LOR	----
TCLP Metals (QC Lot: 1852194)											
VA25A1369-001	BA2503-A-1-Unprocessed	Mercury, TCLP	7439-97-6	E512	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
TCLP Metals (QC Lot: 1852195)											
VA25A1369-001	BA2503-A-1-Unprocessed	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	1.74	1.68	0.06	Diff <2x LOR	----
		Cadmium, TCLP	7440-43-9	E444	0.050	mg/L	0.075	0.076	0.0007	Diff <2x LOR	----
		Calcium, TCLP	7440-70-2	E444	10	mg/L	1790	1790	0.0971%	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	1.70	1.76	3.50%	30%	----
		Copper, TCLP	7440-50-8	E444	0.050	mg/L	1.00	1.03	2.80%	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	99.6	101	1.84%	30%	----
		Nickel, TCLP	7440-02-0	E444	0.25	mg/L	0.38	0.39	0.01	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	20.9	21.6	3.27%	30%	----
		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.



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
Physical Tests (QCLot: 1848578)						
Moisture	---	E144	0.25	%	<0.25	---
Metals (QCLot: 1848576)						
Mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	---
Metals (QCLot: 1848577)						
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
Metals (QCLot: 1848577) - continued						
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	----
TCLP Metals (QCLot: 1852194)						
Mercury, TCLP	7439-97-6	E512	0.001	mg/L	<0.0010	----
TCLP Metals (QCLot: 1852195)						
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	----



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
Physical Tests (QCLot: 1848575)									
pH (1:2 soil:water)	----	E108	----	pH units	6 pH units	100	95.0	105	----
Physical Tests (QCLot: 1848578)									
Moisture	----	E144	0.25	%	50 %	100	90.0	110	----
Metals (QCLot: 1848576)									
Mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	96.5	80.0	120	----
Metals (QCLot: 1848577)									
Aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	102	80.0	120	----
Antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	103	80.0	120	----
Arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	109	80.0	120	----
Barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	99.5	80.0	120	----
Beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	94.4	80.0	120	----
Bismuth	7440-69-9	E440	0.2	mg/kg	100 mg/kg	95.3	80.0	120	----
Boron	7440-42-8	E440	5	mg/kg	100 mg/kg	90.6	80.0	120	----
Cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	96.8	80.0	120	----
Calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	93.1	80.0	120	----
Chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	99.7	80.0	120	----
Cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	98.1	80.0	120	----
Copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	96.9	80.0	120	----
Iron	7439-89-6	E440	50	mg/kg	100 mg/kg	97.0	80.0	120	----
Lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	96.3	80.0	120	----
Lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	98.1	80.0	120	----
Magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	105	80.0	120	----
Manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	98.6	80.0	120	----
Molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	103	80.0	120	----
Nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	98.7	80.0	120	----
Phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	108	80.0	120	----
Potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	98.1	80.0	120	----
Selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	101	80.0	120	----
Silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	94.1	80.0	120	----
Sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	104	80.0	120	----
Strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	100	80.0	120	----
Sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	99.3	80.0	120	----



Sub-Matrix: Soil/Solid					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Target Concentration	LCS	Low	High	Qualifier
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 1848577) - continued									
Thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	95.8	80.0	120	----
Tin	7440-31-5	E440	2	mg/kg	50 mg/kg	102	80.0	120	----
Titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	97.3	80.0	120	----
Tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	99.6	80.0	120	----
Uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	98.8	80.0	120	----
Vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	101	80.0	120	----
Zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	93.7	80.0	120	----
Zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	104	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
TCLP Metals (QCLot: 1852194)										
VA25A1369-001	BA2503-A-1-Unprocessed	Mercury, TCLP	7439-97-6	E512	0.0007 mg/L	0.001 mg/L	67.8	50.0	140	----
TCLP Metals (QCLot: 1852195)										
VA25A1369-001	BA2503-A-1-Unprocessed	Antimony, TCLP	7440-36-0	E444	5.02 mg/L	5 mg/L	100	50.0	140	----
		Arsenic, TCLP	7440-38-2	E444	5.3 mg/L	5 mg/L	106	50.0	140	----
		Barium, TCLP	7440-39-3	E444	13.8 mg/L	12.5 mg/L	111	50.0	140	----
		Beryllium, TCLP	7440-41-7	E444	0.257 mg/L	0.25 mg/L	103	50.0	140	----
		Boron, TCLP	7440-42-8	E444	9.64 mg/L	10 mg/L	96.4	50.0	140	----
		Cadmium, TCLP	7440-43-9	E444	0.244 mg/L	0.25 mg/L	97.7	50.0	140	----
		Calcium, TCLP	7440-70-2	E444	ND mg/L	----	ND	50.0	140	----
		Chromium, TCLP	7440-47-3	E444	1.27 mg/L	1.25 mg/L	101	50.0	140	----
		Cobalt, TCLP	7440-48-4	E444	ND mg/L	----	ND	50.0	140	----
		Copper, TCLP	7440-50-8	E444	2.44 mg/L	2.5 mg/L	97.5	50.0	140	----
		Iron, TCLP	7439-89-6	E444	252 mg/L	250 mg/L	101	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	261 mg/L	250 mg/L	104	50.0	140	----
		Nickel, TCLP	7440-02-0	E444	2.46 mg/L	2.5 mg/L	98.4	50.0	140	----
		Selenium, TCLP	7782-49-2	E444	4.99 mg/L	5 mg/L	99.8	50.0	140	----
		Silver, TCLP	7440-22-4	E444	0.075 mg/L	0.1 mg/L	75.5	50.0	140	----
		Thallium, TCLP	7440-28-0	E444	4.8 mg/L	5 mg/L	96.2	50.0	140	----
		Uranium, TCLP	7440-61-1	E444	4.92 mg/L	5 mg/L	98.3	50.0	150	----
		Vanadium, TCLP	7440-62-2	E444	0.76 mg/L	0.75 mg/L	101	50.0	140	----
		Zinc, TCLP	7440-66-6	E444	ND mg/L	----	ND	50.0	140	----
		Zirconium, TCLP	7440-67-7	E444	0.8 mg/L	1 mg/L	86.0	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:

Sub-Matrix:					Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method			Low	High	
Metals (QCLot: 1848576)									
QC-1848576-003	MRCA-21	Mercury	7439-97-6	E510	0.068 mg/kg	102	70.0	130	----
Metals (QCLot: 1848577)									
QC-1848577-003	MRCA-21	Aluminum	7429-90-5	E440	22500 mg/kg	115	70.0	130	----
QC-1848577-003	MRCA-21	Antimony	7440-36-0	E440	24.8 mg/kg	104	70.0	130	----
QC-1848577-003	MRCA-21	Arsenic	7440-38-2	E440	21.2 mg/kg	104	70.0	130	----
QC-1848577-003	MRCA-21	Barium	7440-39-3	E440	788 mg/kg	102	70.0	130	----
QC-1848577-003	MRCA-21	Beryllium	7440-41-7	E440	1.82 mg/kg	108	70.0	130	----
QC-1848577-003	MRCA-21	Bismuth	7440-69-9	E440	1.78 mg/kg	93.5	70.0	130	----
QC-1848577-003	MRCA-21	Cadmium	7440-43-9	E440	2.15 mg/kg	105	70.0	130	----
QC-1848577-003	MRCA-21	Calcium	7440-70-2	E440	4900 mg/kg	107	70.0	130	----
QC-1848577-003	MRCA-21	Chromium	7440-47-3	E440	56.9 mg/kg	106	70.0	130	----
QC-1848577-003	MRCA-21	Cobalt	7440-48-4	E440	32 mg/kg	102	70.0	130	----
QC-1848577-003	MRCA-21	Copper	7440-50-8	E440	969 mg/kg	107	70.0	130	----
QC-1848577-003	MRCA-21	Iron	7439-89-6	E440	32700 mg/kg	105	70.0	130	----
QC-1848577-003	MRCA-21	Lead	7439-92-1	E440	919 mg/kg	101	70.0	130	----
QC-1848577-003	MRCA-21	Lithium	7439-93-2	E440	47.3 mg/kg	109	70.0	130	----
QC-1848577-003	MRCA-21	Magnesium	7439-95-4	E440	7780 mg/kg	108	70.0	130	----
QC-1848577-003	MRCA-21	Manganese	7439-96-5	E440	8640 mg/kg	103	70.0	130	----
QC-1848577-003	MRCA-21	Molybdenum	7439-98-7	E440	25.1 mg/kg	105	70.0	130	----
QC-1848577-003	MRCA-21	Nickel	7440-02-0	E440	1000 mg/kg	103	70.0	130	----
QC-1848577-003	MRCA-21	Phosphorus	7723-14-0	E440	660 mg/kg	106	70.0	130	----
QC-1848577-003	MRCA-21	Potassium	7440-09-7	E440	10800 mg/kg	108	70.0	130	----
QC-1848577-003	MRCA-21	Selenium	7782-49-2	E440	1.04 mg/kg	97.5	60.0	140	----
QC-1848577-003	MRCA-21	Silver	7440-22-4	E440	8.98 mg/kg	103	70.0	130	----
QC-1848577-003	MRCA-21	Sodium	7440-23-5	E440	1770 mg/kg	120	70.0	130	----
QC-1848577-003	MRCA-21	Strontium	7440-24-6	E440	41 mg/kg	110	70.0	130	----
QC-1848577-003	MRCA-21	Sulfur	7704-34-9	E440	3940 mg/kg	103	50.0	150	----
QC-1848577-003	MRCA-21	Thallium	7440-28-0	E440	0.907 mg/kg	102	70.0	130	----
QC-1848577-003	MRCA-21	Tin	7440-31-5	E440	3.79 mg/kg	105	40.0	160	----
QC-1848577-003	MRCA-21	Titanium	7440-32-6	E440	2790 mg/kg	108	70.0	130	----
QC-1848577-003	MRCA-21	Tungsten	7440-33-7	E440	6.99 mg/kg	112	70.0	130	----
QC-1848577-003	MRCA-21	Uranium	7440-61-1	E440	3.97 mg/kg	97.5	70.0	130	----
QC-1848577-003	MRCA-21	Vanadium	7440-62-2	E440	66.2 mg/kg	105	70.0	130	----



Sub-Matrix:					Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method			Low	High	
Metals (QCLot: 1848577) - continued									
QC-1848577-003	MRCA-21	Zinc	7440-66-6	E440	828 mg/kg	103	70.0	130	----
QC-1848577-003	MRCA-21	Zirconium	7440-67-7	E440	6.91 mg/kg	103	70.0	130	----



ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

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COC # _____

Page _____ of _____

Report To				Report Format / Distribution				Service Requested (Rush for routine analysis subject to availability)																																																																
Company: Covanta Energy				☐ Standard ☐ Other ☒ PDF ☐ Excel ☐ Digital ☐ Fax				☒ Regular (Standard Turnaround Times - Business Days) ☐ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT ☐ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT ☐ Same Day or Weekend Emergency - Contact ALS to Confirm TAT																																																																
Contact: Nicole Victor / Dan Skrypnik				Email 1: nvictor@covanta.com																																																																				
Address: 5150 Riverbend Drive Burnaby BC				Email 2: rminchin@covanta.com																																																																				
Phone: 604-521-1025 Fax: _____				Email 3: dskrypnik@covanta.com																																																																				
				brent.kirkpatrick@metrovancover.org																																																																				
				Sarah.Wellman@metrovancover.org																																																																				
Invoice To Same as Report ?				Client / Project Information				Analysis Request																																																																
Hardcopy of Invoice with Report? ☐ Yes ☐ No				Job #:				Please indicate below Filtered, Preserved or both (F, P, F/P)																																																																
Company:				PO / AFE: PO# 46693 Weekly Bottom Ash - Suite				<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td rowspan="4" style="writing-mode: vertical-rl; transform: rotate(180deg);">MET-TCLP-VA (all metals, Hg)</td> <td rowspan="4" style="writing-mode: vertical-rl; transform: rotate(180deg);">MOISTURE</td> <td rowspan="4" style="writing-mode: vertical-rl; transform: rotate(180deg);">Chrom 6</td> <td rowspan="4" style="writing-mode: vertical-rl; transform: rotate(180deg);">MET-CSR-FULL-VA (all metals)</td> <td colspan="12"></td> <td rowspan="4" style="writing-mode: vertical-rl; transform: rotate(180deg);">Number of Containers</td> </tr> <tr><td colspan="12"></td></tr> <tr><td colspan="12"></td></tr> <tr><td colspan="12"></td></tr> </table>												MET-TCLP-VA (all metals, Hg)	MOISTURE	Chrom 6	MET-CSR-FULL-VA (all metals)													Number of Containers																																				
MET-TCLP-VA (all metals, Hg)	MOISTURE	Chrom 6	MET-CSR-FULL-VA (all metals)																					Number of Containers																																																
Contact:				LSD: (includes 2:1 pH)																																																																				
Address:																																																																								
Phone: _____ Fax: _____				Quote #:																																																																				
Lab Work Order # _____ (lab use only)				ALS Contact: _____				Sampler: _____																																																																
Sample Identification				Date		Time		Sample Type																																																																
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Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details																																																																								
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 provided on a separate Excel tab.																																																																								
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.																																																																								
SHIPMENT RELEASE (client use)				SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)																																																																
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