metrovancouver

Bottom Ash Data

2024 Week 41

The following analytical report represents bottom ash composite results for week 41 of 2024 (October 6, 2024 to October 12, 2024).

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	: **VA24C7529**		
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	: 15-Oct-2024 13:00
PO	: VANCO0000052919	Date Analysis Commenced	: 19-Oct-2024
C-O-C number	: ----	Issue Date	: 23-Oct-2024 13:14
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.

Signatories	*Position*	*Laboratory Department*
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maya Urquhart	Lab Analyst	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Rebecca Sit	Supervisor - Organics Extractions	Organics, 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*
mg/kg	milligrams per kilogram
%	percent
pH units	pH units
mg/L	milligrams per litre

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

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

Qualifiers

Qualifier	Description
DLA	Detection Limit adjusted for required dilution.

Analytical Results

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

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	BA2441-A-1	BA2441-A-2	BA2441-A-3	BA2441-A-4	BA2441-A-5
					Client sampling date / time	09-Oct-2024 09:00	09-Oct-2024 09:00	09-Oct-2024 09:00	09-Oct-2024 09:00	09-Oct-2024 09:00
						VA24C7529-001	VA24C7529-002	VA24C7529-003	VA24C7529-004	VA24C7529-005
						Result	Result	Result	Result	Result
Physical Tests										
Moisture	----	E144/VA	0.25	%		25.5	23.6	25.7	24.1	25.7
pH (1:2 soil:water)	----	E108/VA	0.10	pH units		11.9	12.1	12.0	11.8	12.1
Metals										
Aluminum	7429-90-5	E440/VA	50	mg/kg		42700	34600	66000	44200	32500
Antimony	7440-36-0	E440/VA	0.10	mg/kg		84.0	88.4	101	104	87.4
Arsenic	7440-38-2	E440/VA	0.10	mg/kg		24.7	22.0	21.7	24.0	24.4
Barium	7440-39-3	E440/VA	0.50	mg/kg		623	693	668	557	688
Beryllium	7440-41-7	E440/VA	0.10	mg/kg		0.33	0.40	0.36	0.32	0.38
Bismuth	7440-69-9	E440/VA	0.20	mg/kg		9.02	7.60	8.69	8.94	6.94
Boron	7440-42-8	E440/VA	5.0	mg/kg		157	203	248	164	219
Cadmium	7440-43-9	E440/VA	0.020	mg/kg		7.56	8.65	7.92	6.17	6.18
Calcium	7440-70-2	E440/VA	50	mg/kg		128000	133000	122000	138000	132000
Chromium	7440-47-3	E440/VA	0.50	mg/kg		128	152	180	111	166
Cobalt	7440-48-4	E440/VA	0.10	mg/kg		37.0	37.1	218	28.3	32.0
Copper	7440-50-8	E440/VA	0.50	mg/kg		9560	1110	1840	969	1560
Iron	7439-89-6	E440/VA	50	mg/kg		46600	47700	50800	38000	48300
Lead	7439-92-1	E440/VA	0.50	mg/kg		437	361	277	286	952
Lithium	7439-93-2	E440/VA	2.0	mg/kg		39.2	30.9	56.2	24.4	21.7
Magnesium	7439-95-4	E440/VA	20	mg/kg		9770	11600	10900	9880	12100
Manganese	7439-96-5	E440/VA	1.0	mg/kg		718	853	1040	657	946
Mercury	7439-97-6	E510/VA	0.0500	mg/kg		<0.0500	<0.0500	<0.0500	0.0579	0.0502

Analytical Results

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

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	BA2441-A-1	BA2441-A-2	BA2441-A-3	BA2441-A-4	BA2441-A-5
					Client sampling date / time	09-Oct-2024 09:00	09-Oct-2024 09:00	09-Oct-2024 09:00	09-Oct-2024 09:00	09-Oct-2024 09:00
						VA24C7529-001	VA24C7529-002	VA24C7529-003	VA24C7529-004	VA24C7529-005
						Result	Result	Result	Result	Result
Metals										
Molybdenum	7439-98-7	E440/VA	0.10	mg/kg		13.5	16.6	16.0	23.9	16.2
Nickel	7440-02-0	E440/VA	0.50	mg/kg		99.2	91.8	1410	83.0	364
Phosphorus	7723-14-0	E440/VA	50	mg/kg		11600	9140	8220	10500	7930
Potassium	7440-09-7	E440/VA	100	mg/kg		5000	5890	5650	5410	5250
Selenium	7782-49-2	E440/VA	0.20	mg/kg		0.30	0.37	0.34	0.26	0.30
Silver	7440-22-4	E440/VA	0.10	mg/kg		6.71	7.76	6.12	4.89	5.05
Sodium	7440-23-5	E440/VA	50	mg/kg		15700	17100	16700	14700	16600
Strontium	7440-24-6	E440/VA	0.50	mg/kg		249	333	296	260	262
Sulfur	7704-34-9	E440/VA	1000	mg/kg		8400	8800	7600	8800	8300
Thallium	7440-28-0	E440/VA	0.050	mg/kg		<0.050	0.050	<0.071 DLA	<0.050	<0.050
Tin	7440-31-5	E440/VA	2.0	mg/kg		353	92.6	104	96.0	111
Titanium	7440-32-6	E440/VA	1.0	mg/kg		216	228	1010	270	173
Tungsten	7440-33-7	E440/VA	0.50	mg/kg		21.0	24.6	18.2	24.8	22.9
Uranium	7440-61-1	E440/VA	0.050	mg/kg		2.33	2.74	2.38	2.42	2.47
Vanadium	7440-62-2	E440/VA	0.20	mg/kg		31.6	49.4	40.1	35.3	33.8
Zinc	7440-66-6	E440/VA	2.0	mg/kg		2770	5440	2950	3040	4180
Zirconium	7440-67-7	E440/VA	1.0	mg/kg		3.7	2.6	3.4	4.0	2.7
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444/VA	0.010	pH units		11.9	12.0	12.0	12.0	12.0
pH, TCLP 2nd preliminary	----	EPP444/VA	0.010	pH units		6.70	8.90	8.11	8.56	8.65
pH, TCLP extraction fluid initial	----	EPP444/VA	0.010	pH units		2.86	2.86	2.86	2.86	2.86

Analytical Results

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

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	BA2441-A-1	BA2441-A-2	BA2441-A-3	BA2441-A-4	BA2441-A-5
					Client sampling date / time	09-Oct-2024 09:00	09-Oct-2024 09:00	09-Oct-2024 09:00	09-Oct-2024 09:00	09-Oct-2024 09:00
						VA24C7529-001	VA24C7529-002	VA24C7529-003	VA24C7529-004	VA24C7529-005
						Result	Result	Result	Result	Result
TCLP Metals										
pH, TCLP final	----	EPP444/VA	0.010	pH units		6.62	6.50	6.64	6.67	6.53
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		2.13	2.18	2.10	2.38	2.13
Cadmium, TCLP	7440-43-9	E444/VA	0.050	mg/L		0.098	0.160	0.112	0.276	0.115
Calcium, TCLP	7440-70-2	E444/VA	10	mg/L		2020	2080	2050	2270	2080
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		2.03	1.18	1.54	1.16	0.809
Copper, TCLP	7440-50-8	E444/VA	0.050	mg/L		0.909	0.907	0.862	0.832	0.939
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		132	141	133	145	136
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		0.39	0.54	0.45	0.44	0.43
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/Solid (Matrix: Soil/Solid)					Client sample ID	BA2441-A-1	BA2441-A-2	BA2441-A-3	BA2441-A-4	BA2441-A-5
					Client sampling date / time	09-Oct-2024 09:00	09-Oct-2024 09:00	09-Oct-2024 09:00	09-Oct-2024 09:00	09-Oct-2024 09:00
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit		VA24C7529-001	VA24C7529-002	VA24C7529-003	VA24C7529-004	VA24C7529-005
						Result	Result	Result	Result	Result
TCLP Metals										
Zinc, TCLP	7440-66-6	E444/VA	0.50	mg/L		29.8	19.9	20.2	20.2	23.6
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.

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

Analytical Results

Sub-Matrix: Soil/Solid (Matrix: Soil/Solid)					Client sample ID	BA2441-A-6	BA2441-A-7	BA2441-A-8	BA2441-A-9	BA2441-A-10
					Client sampling date / time	09-Oct-2024 09:00	09-Oct-2024 09:00	09-Oct-2024 09:00	09-Oct-2024 09:00	09-Oct-2024 09:00
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit		VA24C7529-006	VA24C7529-007	VA24C7529-008	VA24C7529-009	VA24C7529-010
						Result	Result	Result	Result	Result
Physical Tests										
Moisture	----	E144/VA	0.25	%		24.7	25.9	26.6	24.9	25.6
pH (1:2 soil:water)	----	E108/VA	0.10	pH units		12.0	12.0	11.9	11.9	12.0
Metals										
Aluminum	7429-90-5	E440/VA	50	mg/kg		50200	49400	38700	44500	37400
Antimony	7440-36-0	E440/VA	0.10	mg/kg		106	88.1	75.7	82.8	93.0
Arsenic	7440-38-2	E440/VA	0.10	mg/kg		19.8	18.0	36.4	20.4	21.6
Barium	7440-39-3	E440/VA	0.50	mg/kg		597	645	572	637	609
Beryllium	7440-41-7	E440/VA	0.10	mg/kg		0.40	0.38	0.40	0.34	0.40
Bismuth	7440-69-9	E440/VA	0.20	mg/kg		8.39	8.20	6.50	6.61	7.52
Boron	7440-42-8	E440/VA	5.0	mg/kg		214	216	196	347	212
Cadmium	7440-43-9	E440/VA	0.020	mg/kg		7.16	6.94	6.86	6.09	6.99
Calcium	7440-70-2	E440/VA	50	mg/kg		136000	139000	140000	138000	142000

Analytical Results

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

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	BA2441-A-6	BA2441-A-7	BA2441-A-8	BA2441-A-9	BA2441-A-10
					Client sampling date / time	09-Oct-2024 09:00	09-Oct-2024 09:00	09-Oct-2024 09:00	09-Oct-2024 09:00	09-Oct-2024 09:00
						VA24C7529-006	VA24C7529-007	VA24C7529-008	VA24C7529-009	VA24C7529-010
						Result	Result	Result	Result	Result
Metals										
Chromium	7440-47-3	E440/VA	0.50	mg/kg		119	138	192	786	168
Cobalt	7440-48-4	E440/VA	0.10	mg/kg		42.3	28.6	25.6	71.6	313
Copper	7440-50-8	E440/VA	0.50	mg/kg		4070	1220	1760	3790	1820
Iron	7439-89-6	E440/VA	50	mg/kg		41700	44700	35800	53800	45700
Lead	7439-92-1	E440/VA	0.50	mg/kg		326	292	286	268	284
Lithium	7439-93-2	E440/VA	2.0	mg/kg		28.5	31.2	25.2	89.4	26.8
Magnesium	7439-95-4	E440/VA	20	mg/kg		11400	11300	11500	10100	11800
Manganese	7439-96-5	E440/VA	1.0	mg/kg		782	712	858	1080	736
Mercury	7439-97-6	E510/VA	0.0500	mg/kg		<0.0500	<0.0500	<0.0500	0.0682	<0.0500
Molybdenum	7439-98-7	E440/VA	0.10	mg/kg		16.0	16.5	18.8	18.8	16.5
Nickel	7440-02-0	E440/VA	0.50	mg/kg		114	105	150	233	176
Phosphorus	7723-14-0	E440/VA	50	mg/kg		8260	7820	8660	7590	8960
Potassium	7440-09-7	E440/VA	100	mg/kg		6070	5500	5280	4850	5710
Selenium	7782-49-2	E440/VA	0.20	mg/kg		0.25	0.32	0.29	0.33	0.30
Silver	7440-22-4	E440/VA	0.10	mg/kg		6.25	4.67	5.85	20.9	4.84
Sodium	7440-23-5	E440/VA	50	mg/kg		17700	15500	14900	15000	17200
Strontium	7440-24-6	E440/VA	0.50	mg/kg		313	282	303	269	299
Sulfur	7704-34-9	E440/VA	1000	mg/kg		9400	9300	9100	8300	9600
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		100	98.4	95.8	89.5	104
Titanium	7440-32-6	E440/VA	1.0	mg/kg		335	465	199	323	219

Analytical Results

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

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	BA2441-A-6	BA2441-A-7	BA2441-A-8	BA2441-A-9	BA2441-A-10
					Client sampling date / time	09-Oct-2024 09:00	09-Oct-2024 09:00	09-Oct-2024 09:00	09-Oct-2024 09:00	09-Oct-2024 09:00
						VA24C7529-006	VA24C7529-007	VA24C7529-008	VA24C7529-009	VA24C7529-010
						Result	Result	Result	Result	Result
Metals										
Tungsten	7440-33-7	E440/VA	0.50	mg/kg		23.5	19.3	21.0	41.2	21.9
Uranium	7440-61-1	E440/VA	0.050	mg/kg		2.64	2.58	2.63	2.39	2.73
Vanadium	7440-62-2	E440/VA	0.20	mg/kg		39.0	36.7	46.0	38.6	36.1
Zinc	7440-66-6	E440/VA	2.0	mg/kg		3720	3190	3350	3380	2870
Zirconium	7440-67-7	E440/VA	1.0	mg/kg		3.6	2.2	4.6	3.2	2.0
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444/VA	0.010	pH units		12.0	12.0	12.0	12.0	12.0
pH, TCLP 2nd preliminary	----	EPP444/VA	0.010	pH units		8.61	8.84	8.91	8.82	9.02
pH, TCLP extraction fluid initial	----	EPP444/VA	0.010	pH units		2.86	2.86	2.86	2.86	2.86
pH, TCLP final	----	EPP444/VA	0.010	pH units		6.52	6.55	6.47	6.41	6.60
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		2.20	2.24	2.10	2.10	2.20
Cadmium, TCLP	7440-43-9	E444/VA	0.050	mg/L		0.106	0.344	0.150	0.495	0.105
Calcium, TCLP	7440-70-2	E444/VA	10	mg/L		2140	2200	2060	2130	2120
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		0.717	0.789	1.18	0.646	0.924
Copper, TCLP	7440-50-8	E444/VA	0.050	mg/L		0.967	0.992	1.28	1.02	1.48
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/Solid (Matrix: Soil/Solid)					Client sample ID	BA2441-A-6	BA2441-A-7	BA2441-A-8	BA2441-A-9	BA2441-A-10
					Client sampling date / time	09-Oct-2024 09:00	09-Oct-2024 09:00	09-Oct-2024 09:00	09-Oct-2024 09:00	09-Oct-2024 09:00
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit		VA24C7529-006	VA24C7529-007	VA24C7529-008	VA24C7529-009	VA24C7529-010
						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		140	142	134	133	138
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		0.43	0.51	0.43	0.49	0.42
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		25.7	26.6	17.8	26.4	19.3
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.

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

Analytical Results

Sub-Matrix: Soil/Solid (Matrix: Soil/Solid)					Client sample ID	BA2441-A-11	BA2441-A-12	----	----	----
					Client sampling date / time	09-Oct-2024 09:00	09-Oct-2024 09:00	----	----	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit		VA24C7529-011	VA24C7529-012	----	----	----
						Result	Result	----	----	----
Physical Tests										
Moisture	----	E144/VA	0.25	%		26.5	23.9	----	----	----
pH (1:2 soil:water)	----	E108/VA	0.10	pH units		11.9	12.0	----	----	----

Analytical Results

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

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	BA2441-A-11	BA2441-A-12	----	----	----
					Client sampling date / time	09-Oct-2024 09:00	09-Oct-2024 09:00	----	----	----
						VA24C7529-011	VA24C7529-012	----	----	----
						Result	Result	----	----	----
Metals										
Aluminum	7429-90-5	E440/VA	50	mg/kg		42300	38000	----	----	----
Antimony	7440-36-0	E440/VA	0.10	mg/kg		99.5	112	----	----	----
Arsenic	7440-38-2	E440/VA	0.10	mg/kg		23.4	21.8	----	----	----
Barium	7440-39-3	E440/VA	0.50	mg/kg		609	554	----	----	----
Beryllium	7440-41-7	E440/VA	0.10	mg/kg		0.33	0.38	----	----	----
Bismuth	7440-69-9	E440/VA	0.20	mg/kg		6.98	8.29	----	----	----
Boron	7440-42-8	E440/VA	5.0	mg/kg		211	254	----	----	----
Cadmium	7440-43-9	E440/VA	0.020	mg/kg		6.49	8.30	----	----	----
Calcium	7440-70-2	E440/VA	50	mg/kg		129000	149000	----	----	----
Chromium	7440-47-3	E440/VA	0.50	mg/kg		171	155	----	----	----
Cobalt	7440-48-4	E440/VA	0.10	mg/kg		32.9	30.9	----	----	----
Copper	7440-50-8	E440/VA	0.50	mg/kg		1660	1640	----	----	----
Iron	7439-89-6	E440/VA	50	mg/kg		65600	51000	----	----	----
Lead	7439-92-1	E440/VA	0.50	mg/kg		314	356	----	----	----
Lithium	7439-93-2	E440/VA	2.0	mg/kg		25.4	26.9	----	----	----
Magnesium	7439-95-4	E440/VA	20	mg/kg		10500	10800	----	----	----
Manganese	7439-96-5	E440/VA	1.0	mg/kg		1120	836	----	----	----
Mercury	7439-97-6	E510/VA	0.0500	mg/kg		<0.0500	<0.0500	----	----	----
Molybdenum	7439-98-7	E440/VA	0.10	mg/kg		15.7	18.5	----	----	----
Nickel	7440-02-0	E440/VA	0.50	mg/kg		108	99.0	----	----	----
Phosphorus	7723-14-0	E440/VA	50	mg/kg		9800	12000	----	----	----

Analytical Results

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

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	BA2441-A-11	BA2441-A-12	----	----	----
					Client sampling date / time	09-Oct-2024 09:00	09-Oct-2024 09:00	----	----	----
						VA24C7529-011	VA24C7529-012	----	----	----
						Result	Result	----	----	----
Metals										
Potassium	7440-09-7	E440/VA	100	mg/kg		5510	5500	----	----	----
Selenium	7782-49-2	E440/VA	0.20	mg/kg		0.29	0.36	----	----	----
Silver	7440-22-4	E440/VA	0.10	mg/kg		4.95	5.31	----	----	----
Sodium	7440-23-5	E440/VA	50	mg/kg		15500	15500	----	----	----
Strontium	7440-24-6	E440/VA	0.50	mg/kg		442	331	----	----	----
Sulfur	7704-34-9	E440/VA	1000	mg/kg		9300	9500	----	----	----
Thallium	7440-28-0	E440/VA	0.050	mg/kg		<0.050	0.052	----	----	----
Tin	7440-31-5	E440/VA	2.0	mg/kg		108	124	----	----	----
Titanium	7440-32-6	E440/VA	1.0	mg/kg		302	232	----	----	----
Tungsten	7440-33-7	E440/VA	0.50	mg/kg		22.3	22.6	----	----	----
Uranium	7440-61-1	E440/VA	0.050	mg/kg		2.46	2.67	----	----	----
Vanadium	7440-62-2	E440/VA	0.20	mg/kg		35.6	36.9	----	----	----
Zinc	7440-66-6	E440/VA	2.0	mg/kg		2300	6580	----	----	----
Zirconium	7440-67-7	E440/VA	1.0	mg/kg		3.5	4.6	----	----	----
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444/VA	0.010	pH units		12.0	12.0	----	----	----
pH, TCLP 2nd preliminary	----	EPP444/VA	0.010	pH units		8.84	8.91	----	----	----
pH, TCLP extraction fluid initial	----	EPP444/VA	0.010	pH units		2.86	2.86	----	----	----
pH, TCLP final	----	EPP444/VA	0.010	pH units		6.37	6.55	----	----	----
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/Solid
(Matrix: Soil/Solid)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	BA2441-A-11	BA2441-A-12	----	----	----
					Client sampling date / time	09-Oct-2024 09:00	09-Oct-2024 09:00	----	----	----
						VA24C7529-011	VA24C7529-012	----	----	----
						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		2.11	2.16	----	----	----
Cadmium, TCLP	7440-43-9	E444/VA	0.050	mg/L		0.139	0.274	----	----	----
Calcium, TCLP	7440-70-2	E444/VA	10	mg/L		2060	2130	----	----	----
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		1.16	0.914	----	----	----
Copper, TCLP	7440-50-8	E444/VA	0.050	mg/L		1.09	1.14	----	----	----
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		133	140	----	----	----
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		0.42	0.52	----	----	----
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		23.6	17.3	----	----	----
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.

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

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA24C7529**	Page	: 1 of 17
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	: 15-Oct-2024 13:00
PO	: VANCO0000052919	Issue Date	: 23-Oct-2024 13:12
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	VA24C7529-001	BA2441-A-1	Arsenic	7440-38-2	E440	37.2 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA24C7529-001	BA2441-A-1	Bismuth	7440-69-9	E440	43.4 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA24C7529-001	BA2441-A-1	Boron	7440-42-8	E440	108 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA24C7529-001	BA2441-A-1	Cadmium	7440-43-9	E440	34.1 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA24C7529-001	BA2441-A-1	Chromium	7440-47-3	E440	36.0 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA24C7529-001	BA2441-A-1	Cobalt	7440-48-4	E440	162 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA24C7529-001	BA2441-A-1	Copper	7440-50-8	E440	160 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA24C7529-001	BA2441-A-1	Lead	7439-92-1	E440	83.5 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.
Metals	VA24C7529-001	BA2441-A-1	Lithium	7439-93-2	E440	53.2 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA24C7529-001	BA2441-A-1	Molybdenum	7439-98-7	E440	48.9 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.
Metals	VA24C7529-001	BA2441-A-1	Nickel	7440-02-0	E440	172 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA24C7529-001	BA2441-A-1	Phosphorus	7723-14-0	E440	52.2 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA24C7529-001	BA2441-A-1	Tin	7440-31-5	E440	115 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.
Metals	VA24C7529-001	BA2441-A-1	Titanium	7440-32-6	E440	48.5 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.
Metals	VA24C7529-001	BA2441-A-1	Zinc	7440-66-6	E440	52.3 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA24C7529-001	BA2441-A-1	Zirconium	7440-67-7	E440	2.3 % DUP-H	Diff <2x LOR	Low Level DUP DQO exceeded (difference > 2 LOR).

Result Qualifiers

Qualifier	*Description*

Matrix: **Soil/Solid**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
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 / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2441-A-1	E510	09-Oct-2024	19-Oct-2024	28 days	10 days	✓	21-Oct-2024	28 days	12 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2441-A-10	E510	09-Oct-2024	19-Oct-2024	28 days	10 days	✓	21-Oct-2024	28 days	12 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2441-A-11	E510	09-Oct-2024	19-Oct-2024	28 days	10 days	✓	21-Oct-2024	28 days	12 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2441-A-12	E510	09-Oct-2024	19-Oct-2024	28 days	10 days	✓	21-Oct-2024	28 days	12 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2441-A-2	E510	09-Oct-2024	19-Oct-2024	28 days	10 days	✓	21-Oct-2024	28 days	12 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2441-A-3	E510	09-Oct-2024	19-Oct-2024	28 days	10 days	✓	21-Oct-2024	28 days	12 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2441-A-4	E510	09-Oct-2024	19-Oct-2024	28 days	10 days	✓	21-Oct-2024	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2441-A-5	E510	09-Oct-2024	19-Oct-2024	28 days	10 days	✓	21-Oct-2024	28 days	12 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2441-A-6	E510	09-Oct-2024	19-Oct-2024	28 days	10 days	✓	21-Oct-2024	28 days	12 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2441-A-7	E510	09-Oct-2024	19-Oct-2024	28 days	10 days	✓	21-Oct-2024	28 days	12 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2441-A-8	E510	09-Oct-2024	19-Oct-2024	28 days	10 days	✓	21-Oct-2024	28 days	12 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2441-A-9	E510	09-Oct-2024	19-Oct-2024	28 days	10 days	✓	21-Oct-2024	28 days	12 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2441-A-1	E440	09-Oct-2024	19-Oct-2024	180 days	10 days	✓	22-Oct-2024	180 days	13 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2441-A-10	E440	09-Oct-2024	19-Oct-2024	180 days	10 days	✓	22-Oct-2024	180 days	13 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2441-A-11	E440	09-Oct-2024	19-Oct-2024	180 days	10 days	✓	22-Oct-2024	180 days	13 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2441-A-12	E440	09-Oct-2024	19-Oct-2024	180 days	10 days	✓	22-Oct-2024	180 days	13 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2441-A-2	E440	09-Oct-2024	19-Oct-2024	180 days	10 days	✓	22-Oct-2024	180 days	13 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2441-A-3	E440	09-Oct-2024	19-Oct-2024	180 days	10 days	✓	22-Oct-2024	180 days	13 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2441-A-4	E440	09-Oct-2024	19-Oct-2024	180 days	10 days	✓	22-Oct-2024	180 days	13 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2441-A-5	E440	09-Oct-2024	19-Oct-2024	180 days	10 days	✓	22-Oct-2024	180 days	13 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2441-A-6	E440	09-Oct-2024	19-Oct-2024	180 days	10 days	✓	22-Oct-2024	180 days	13 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2441-A-7	E440	09-Oct-2024	19-Oct-2024	180 days	10 days	✓	22-Oct-2024	180 days	13 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2441-A-8	E440	09-Oct-2024	19-Oct-2024	180 days	10 days	✓	22-Oct-2024	180 days	13 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2441-A-9	E440	09-Oct-2024	19-Oct-2024	180 days	10 days	✓	22-Oct-2024	180 days	13 days	✓
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2441-A-1	E144	09-Oct-2024	----	----	----		18-Oct-2024	----	9 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2441-A-10	E144	09-Oct-2024	----	----	----		18-Oct-2024	----	9 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2441-A-11	E144	09-Oct-2024	----	----	----		18-Oct-2024	----	9 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2441-A-12	E144	09-Oct-2024	----	----	----		18-Oct-2024	----	9 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2441-A-2	E144	09-Oct-2024	----	----	----		18-Oct-2024	----	9 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2441-A-3	E144	09-Oct-2024	----	----	----		18-Oct-2024	----	9 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2441-A-4	E144	09-Oct-2024	----	----	----		18-Oct-2024	----	9 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2441-A-5	E144	09-Oct-2024	----	----	----		18-Oct-2024	----	9 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2441-A-6	E144	09-Oct-2024	----	----	----		18-Oct-2024	----	9 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2441-A-7	E144	09-Oct-2024	----	----	----		18-Oct-2024	----	9 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2441-A-8	E144	09-Oct-2024	----	----	----		18-Oct-2024	----	9 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2441-A-9	E144	09-Oct-2024	----	----	----		18-Oct-2024	----	9 days	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2441-A-1	E108	09-Oct-2024	19-Oct-2024	30 days	10 days	✓	21-Oct-2024	30 days	12 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2441-A-10	E108	09-Oct-2024	19-Oct-2024	30 days	10 days	✓	21-Oct-2024	30 days	12 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2441-A-11	E108	09-Oct-2024	19-Oct-2024	30 days	10 days	✓	21-Oct-2024	30 days	12 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2441-A-12	E108	09-Oct-2024	19-Oct-2024	30 days	10 days	✓	21-Oct-2024	30 days	12 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2441-A-2	E108	09-Oct-2024	19-Oct-2024	30 days	10 days	✓	21-Oct-2024	30 days	12 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2441-A-3	E108	09-Oct-2024	19-Oct-2024	30 days	10 days	✓	21-Oct-2024	30 days	12 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2441-A-4	E108	09-Oct-2024	19-Oct-2024	30 days	10 days	✓	21-Oct-2024	30 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2441-A-5	E108	09-Oct-2024	19-Oct-2024	30 days	10 days	✓	21-Oct-2024	30 days	12 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2441-A-6	E108	09-Oct-2024	19-Oct-2024	30 days	10 days	✓	21-Oct-2024	30 days	12 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2441-A-7	E108	09-Oct-2024	19-Oct-2024	30 days	10 days	✓	21-Oct-2024	30 days	12 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2441-A-8	E108	09-Oct-2024	19-Oct-2024	30 days	10 days	✓	21-Oct-2024	30 days	12 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2441-A-9	E108	09-Oct-2024	19-Oct-2024	30 days	10 days	✓	21-Oct-2024	30 days	12 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2441-A-1	E512	21-Oct-2024	22-Oct-2024	40 days	13 days	✓	22-Oct-2024	40 days	13 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2441-A-10	E512	21-Oct-2024	22-Oct-2024	40 days	13 days	✓	22-Oct-2024	40 days	13 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2441-A-11	E512	21-Oct-2024	22-Oct-2024	40 days	13 days	✓	22-Oct-2024	40 days	13 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2441-A-12	E512	21-Oct-2024	22-Oct-2024	40 days	13 days	✓	22-Oct-2024	40 days	13 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2441-A-2	E512	21-Oct-2024	22-Oct-2024	40 days	13 days	✓	22-Oct-2024	40 days	13 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2441-A-3	E512	21-Oct-2024	22-Oct-2024	40 days	13 days	✓	22-Oct-2024	40 days	13 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2441-A-4	E512	21-Oct-2024	22-Oct-2024	40 days	13 days	✓	22-Oct-2024	40 days	13 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2441-A-5	E512	21-Oct-2024	22-Oct-2024	40 days	13 days	✓	22-Oct-2024	40 days	13 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2441-A-6	E512	21-Oct-2024	22-Oct-2024	40 days	13 days	✓	22-Oct-2024	40 days	13 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2441-A-7	E512	21-Oct-2024	22-Oct-2024	40 days	13 days	✓	22-Oct-2024	40 days	13 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2441-A-8	E512	21-Oct-2024	22-Oct-2024	40 days	13 days	✓	22-Oct-2024	40 days	13 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2441-A-9	E512	21-Oct-2024	22-Oct-2024	40 days	13 days	✓	22-Oct-2024	40 days	13 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2441-A-1	E444	21-Oct-2024	22-Oct-2024	192 days	13 days	✓	23-Oct-2024	192 days	14 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2441-A-10	E444	21-Oct-2024	22-Oct-2024	192 days	13 days	✓	23-Oct-2024	192 days	14 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2441-A-11	E444	21-Oct-2024	22-Oct-2024	192 days	13 days	✓	23-Oct-2024	192 days	14 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2441-A-12	E444	21-Oct-2024	22-Oct-2024	192 days	13 days	✓	23-Oct-2024	192 days	14 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2441-A-2	E444	21-Oct-2024	22-Oct-2024	192 days	13 days	✓	23-Oct-2024	192 days	14 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2441-A-3	E444	21-Oct-2024	22-Oct-2024	192 days	13 days	✓	23-Oct-2024	192 days	14 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2441-A-4	E444	21-Oct-2024	22-Oct-2024	192 days	13 days	✓	23-Oct-2024	192 days	14 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2441-A-5	E444	21-Oct-2024	22-Oct-2024	192 days	13 days	✓	23-Oct-2024	192 days	14 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2441-A-6	E444	21-Oct-2024	22-Oct-2024	192 days	13 days	✓	23-Oct-2024	192 days	14 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2441-A-7	E444	21-Oct-2024	22-Oct-2024	192 days	13 days	✓	23-Oct-2024	192 days	14 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* Rec	*Holding Times* Actual	*Eval*	*Analysis Date*	*Holding Times* Rec	*Holding Times* Actual	*Eval*
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2441-A-8	E444	21-Oct-2024	22-Oct-2024	192 days	13 days	✓	23-Oct-2024	192 days	14 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2441-A-9	E444	21-Oct-2024	22-Oct-2024	192 days	13 days	✓	23-Oct-2024	192 days	14 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2441-A-1	EPP444	09-Oct-2024	21-Oct-2024	----	----		----	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) BA2441-A-10	EPP444	09-Oct-2024	21-Oct-2024	----	----		----	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) BA2441-A-11	EPP444	09-Oct-2024	21-Oct-2024	----	----		----	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) BA2441-A-12	EPP444	09-Oct-2024	21-Oct-2024	----	----		----	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) BA2441-A-2	EPP444	09-Oct-2024	21-Oct-2024	----	----		----	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) BA2441-A-3	EPP444	09-Oct-2024	21-Oct-2024	----	----		----	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) BA2441-A-4	EPP444	09-Oct-2024	21-Oct-2024	----	----		----	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS)										
BA2441-A-5	EPP444	09-Oct-2024	21-Oct-2024	----	----		----	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)										
BA2441-A-6	EPP444	09-Oct-2024	21-Oct-2024	----	----		----	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)										
BA2441-A-7	EPP444	09-Oct-2024	21-Oct-2024	----	----		----	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)										
BA2441-A-8	EPP444	09-Oct-2024	21-Oct-2024	----	----		----	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)										
BA2441-A-9	EPP444	09-Oct-2024	21-Oct-2024	----	----		----	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	1723818	1	12	8.3	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	1718083	1	12	8.3	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	1723817	1	12	8.3	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	1718084	1	12	8.3	5.0	✓
Moisture Content by Gravimetry	E144	1718086	1	12	8.3	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	1718085	1	12	8.3	5.0	✓
Laboratory Control Samples (LCS)							
Mercury in Soil/Solid by CVAAS	E510	1718083	2	12	16.6	10.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	1718084	2	12	16.6	10.0	✓
Moisture Content by Gravimetry	E144	1718086	1	12	8.3	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	1718085	1	12	8.3	5.0	✓
Method Blanks (MB)							
Mercury by CVAAS (TCLP)	E512	1723818	1	12	8.3	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	1718083	1	12	8.3	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	1723817	1	12	8.3	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	1718084	1	12	8.3	5.0	✓
Moisture Content by Gravimetry	E144	1718086	1	12	8.3	5.0	✓
Matrix Spikes (MS)							
Mercury by CVAAS (TCLP)	E512	1723818	1	12	8.3	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	1723817	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 ± 5°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 ºC) 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 HNO3 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 HNO3 and HCl, followed by CVAAS analysis.
Mercury by CVAAS (TCLP)	E512 ALS Environmental - Vancouver	Soil/Solid	SW 846 -1311/245.1 CVAA ON TCLP LEACHATE	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°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water.

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 HNO3 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	: **VA24C7529**	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	: 15-Oct-2024 13:00
PO	: VANCO0000052919	Date Analysis Commenced	: 18-Oct-2024
C-O-C number	: ----	Issue Date	: 23-Oct-2024 13:12
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*
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Maya Urquhart	Lab Analyst	Vancouver Metals, Burnaby, British Columbia
Owen Cheng		Vancouver Metals, Burnaby, British Columbia
Rebecca Sit	Supervisor - Organics Extractions	Vancouver Organics, 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: 1718085)											
VA24C7529-001	BA2441-A-1	pH (1:2 soil:water)	----	E108	0.10	pH units	11.9	12.0	1.0%	5%	----
Physical Tests (QC Lot: 1718086)											
VA24C7529-001	BA2441-A-1	Moisture	----	E144	0.25	%	25.5	24.8	2.74%	20%	----
Metals (QC Lot: 1718083)											
VA24C7529-001	BA2441-A-1	Mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	0	Diff <2x LOR	----
Metals (QC Lot: 1718084)											
VA24C7529-001	BA2441-A-1	Aluminum	7429-90-5	E440	50	mg/kg	42700	37900	12.0%	40%	----
		Antimony	7440-36-0	E440	0.10	mg/kg	84.0	90.8	7.67%	30%	----
		Arsenic	7440-38-2	E440	0.10	mg/kg	24.7	17.0	37.2%	30%	DUP-H
		Barium	7440-39-3	E440	0.50	mg/kg	623	751	18.7%	40%	----
		Beryllium	7440-41-7	E440	0.10	mg/kg	0.33	0.38	0.05	Diff <2x LOR	----
		Bismuth	7440-69-9	E440	0.20	mg/kg	9.02	5.80	43.4%	30%	DUP-H
		Boron	7440-42-8	E440	5.0	mg/kg	157	524	108%	30%	DUP-H
		Cadmium	7440-43-9	E440	0.020	mg/kg	7.56	5.36	34.1%	30%	DUP-H
		Calcium	7440-70-2	E440	50	mg/kg	128000	128000	0.243%	30%	----
		Chromium	7440-47-3	E440	0.50	mg/kg	128	185	36.0%	30%	DUP-H
		Cobalt	7440-48-4	E440	0.10	mg/kg	37.0	348	162%	30%	DUP-H
		Copper	7440-50-8	E440	0.50	mg/kg	9560	1050	160%	30%	DUP-H
		Iron	7439-89-6	E440	50	mg/kg	46600	52800	12.6%	30%	----
		Lead	7439-92-1	E440	0.50	mg/kg	437	1060	83.5%	40%	DUP-H
		Lithium	7439-93-2	E440	2.0	mg/kg	39.2	67.6	53.2%	30%	DUP-H
		Magnesium	7439-95-4	E440	20	mg/kg	9770	10400	6.20%	30%	----
		Manganese	7439-96-5	E440	1.0	mg/kg	718	749	4.25%	30%	----
		Molybdenum	7439-98-7	E440	0.10	mg/kg	13.5	22.3	48.9%	40%	DUP-H
		Nickel	7440-02-0	E440	0.50	mg/kg	99.2	1300	172%	30%	DUP-H
		Phosphorus	7723-14-0	E440	50	mg/kg	11600	6820	52.2%	30%	DUP-H
		Potassium	7440-09-7	E440	100	mg/kg	5000	5080	1.66%	40%	----
		Selenium	7782-49-2	E440	0.20	mg/kg	0.30	0.24	0.06	Diff <2x LOR	----
		Silver	7440-22-4	E440	0.10	mg/kg	6.71	5.58	18.3%	40%	----
		Sodium	7440-23-5	E440	50	mg/kg	15700	15600	0.379%	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*
Metals (QC Lot: 1718084) - continued											
VA24C7529-001	BA2441-A-1	Strontium	7440-24-6	E440	0.50	mg/kg	249	280	11.6%	40%	----
		Sulfur	7704-34-9	E440	1000	mg/kg	8400	8500	1.04%	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	353	94.5	115%	40%	DUP-H
		Titanium	7440-32-6	E440	1.0	mg/kg	216	354	48.5%	40%	DUP-H
		Tungsten	7440-33-7	E440	0.50	mg/kg	21.0	19.5	7.51%	30%	----
		Uranium	7440-61-1	E440	0.050	mg/kg	2.33	2.32	0.646%	30%	----
		Vanadium	7440-62-2	E440	0.20	mg/kg	31.6	37.1	15.7%	30%	----
		Zinc	7440-66-6	E440	2.0	mg/kg	2770	4730	52.3%	30%	DUP-H
		Zirconium	7440-67-7	E440	1.0	mg/kg	3.7	# 1.4	2.3	Diff <2x LOR	DUP-H
TCLP Metals (QC Lot: 1723817)											
VA24C7529-001	BA2441-A-1	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	2.13	2.18	0.05	Diff <2x LOR	----
		Cadmium, TCLP	7440-43-9	E444	0.050	mg/L	0.098	0.106	0.008	Diff <2x LOR	----
		Calcium, TCLP	7440-70-2	E444	10	mg/L	2020	2110	4.72%	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	2.03	2.14	4.95%	30%	----
		Copper, TCLP	7440-50-8	E444	0.050	mg/L	0.909	0.979	7.44%	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	132	142	6.97%	30%	----
		Nickel, TCLP	7440-02-0	E444	0.25	mg/L	0.39	0.41	0.02	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	29.8	33.4	11.2%	30%	----
		Zirconium, TCLP	7440-67-7	E444	10	mg/L	<10	<10	0	Diff <2x LOR	----
TCLP Metals (QC Lot: 1723818)											
VA24C7529-001	BA2441-A-1	Mercury, TCLP	7439-97-6	E512	0.0010	mg/L	<0.0010	<0.0010	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: 1718086)						
Moisture	----	E144	0.25	%	<0.25	----
Metals (QCLot: 1718083)						
Mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 1718084)						
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: 1718084) - 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: 1723817)						
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	----
TCLP Metals (QCLot: 1723818)						
Mercury, TCLP	7439-97-6	E512	0.001	mg/L	<0.0010	----

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: 1718085)									
pH (1:2 soil:water)	----	E108	----	pH units	6 pH units	100	95.0	105	----
Physical Tests (QCLot: 1718086)									
Moisture	----	E144	0.25	%	50 %	97.6	90.0	110	----
Metals (QCLot: 1718083)									
Mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	102	80.0	120	----
Metals (QCLot: 1718084)									
Aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	109	80.0	120	----
Antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	104	80.0	120	----
Arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	110	80.0	120	----
Barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	110	80.0	120	----
Beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	106	80.0	120	----
Bismuth	7440-69-9	E440	0.2	mg/kg	100 mg/kg	98.0	80.0	120	----
Boron	7440-42-8	E440	5	mg/kg	100 mg/kg	102	80.0	120	----
Cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	102	80.0	120	----
Calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	103	80.0	120	----
Chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	106	80.0	120	----
Cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	103	80.0	120	----
Copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	101	80.0	120	----
Iron	7439-89-6	E440	50	mg/kg	100 mg/kg	105	80.0	120	----
Lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	103	80.0	120	----
Lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	110	80.0	120	----
Magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	109	80.0	120	----
Manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	104	80.0	120	----
Molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	104	80.0	120	----
Nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	102	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	109	80.0	120	----
Selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	104	80.0	120	----
Silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	101	80.0	120	----
Sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	107	80.0	120	----
Strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	102	80.0	120	----
Sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	104	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
Metals (QCLot: 1718084) - continued									
Thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	100	80.0	120	----
Tin	7440-31-5	E440	2	mg/kg	50 mg/kg	105	80.0	120	----
Titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	103	80.0	120	----
Tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	101	80.0	120	----
Uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	106	80.0	120	----
Vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	107	80.0	120	----
Zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	106	80.0	120	----
Zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	112	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: 1723817)										
VA24C7529-001	BA2441-A-1	Antimony, TCLP	7440-36-0	E444	4.79 mg/L	5 mg/L	95.9	50.0	140	----
		Arsenic, TCLP	7440-38-2	E444	5.0 mg/L	5 mg/L	99.9	50.0	140	----
		Barium, TCLP	7440-39-3	E444	12.5 mg/L	12.5 mg/L	99.9	50.0	140	----
		Beryllium, TCLP	7440-41-7	E444	0.238 mg/L	0.25 mg/L	95.2	50.0	140	----
		Boron, TCLP	7440-42-8	E444	8.96 mg/L	10 mg/L	89.6	50.0	140	----
		Cadmium, TCLP	7440-43-9	E444	0.248 mg/L	0.25 mg/L	99.3	50.0	140	----
		Calcium, TCLP	7440-70-2	E444	ND mg/L	----	ND	50.0	140	----
		Chromium, TCLP	7440-47-3	E444	1.19 mg/L	1.25 mg/L	94.9	50.0	140	----
		Cobalt, TCLP	7440-48-4	E444	ND mg/L	----	ND	50.0	140	----
		Copper, TCLP	7440-50-8	E444	2.33 mg/L	2.5 mg/L	93.2	50.0	140	----
		Iron, TCLP	7439-89-6	E444	235 mg/L	250 mg/L	94.2	50.0	140	----
		Lead, TCLP	7439-92-1	E444	9.35 mg/L	10 mg/L	93.5	50.0	140	----
		Magnesium, TCLP	7439-95-4	E444	237 mg/L	250 mg/L	94.7	50.0	140	----
		Nickel, TCLP	7440-02-0	E444	2.31 mg/L	2.5 mg/L	92.4	50.0	140	----
		Selenium, TCLP	7782-49-2	E444	5.05 mg/L	5 mg/L	101	50.0	140	----
		Silver, TCLP	7440-22-4	E444	0.089 mg/L	0.1 mg/L	89.4	50.0	140	----
		Thallium, TCLP	7440-28-0	E444	4.7 mg/L	5 mg/L	93.2	50.0	140	----
		Uranium, TCLP	7440-61-1	E444	4.70 mg/L	5 mg/L	93.9	50.0	150	----
		Vanadium, TCLP	7440-62-2	E444	0.72 mg/L	0.75 mg/L	96.0	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	76.6	50.0	150	----
TCLP Metals (QCLot: 1723818)										
VA24C7529-001	BA2441-A-1	Mercury, TCLP	7439-97-6	E512	0.0010 mg/L	0.001 mg/L	97.3	50.0	140	----

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:

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Metals (QCLot: 1718083)									
QC-1718083-003	MRCA-21	Mercury	7439-97-6	E510	0.068 mg/kg	103	70.0	130	----
Metals (QCLot: 1718084)									
QC-1718084-003	MRCA-21	Aluminum	7429-90-5	E440	22500 mg/kg	109	70.0	130	----
QC-1718084-003	MRCA-21	Antimony	7440-36-0	E440	24.8 mg/kg	105	70.0	130	----
QC-1718084-003	MRCA-21	Arsenic	7440-38-2	E440	21.2 mg/kg	102	70.0	130	----
QC-1718084-003	MRCA-21	Barium	7440-39-3	E440	788 mg/kg	101	70.0	130	----
QC-1718084-003	MRCA-21	Beryllium	7440-41-7	E440	1.82 mg/kg	113	70.0	130	----
QC-1718084-003	MRCA-21	Bismuth	7440-69-9	E440	1.78 mg/kg	96.0	70.0	130	----
QC-1718084-003	MRCA-21	Cadmium	7440-43-9	E440	2.15 mg/kg	100	70.0	130	----
QC-1718084-003	MRCA-21	Calcium	7440-70-2	E440	4900 mg/kg	106	70.0	130	----
QC-1718084-003	MRCA-21	Chromium	7440-47-3	E440	56.9 mg/kg	102	70.0	130	----
QC-1718084-003	MRCA-21	Cobalt	7440-48-4	E440	32 mg/kg	99.6	70.0	130	----
QC-1718084-003	MRCA-21	Copper	7440-50-8	E440	969 mg/kg	97.0	70.0	130	----
QC-1718084-003	MRCA-21	Iron	7439-89-6	E440	32700 mg/kg	107	70.0	130	----
QC-1718084-003	MRCA-21	Lead	7439-92-1	E440	919 mg/kg	101	70.0	130	----
QC-1718084-003	MRCA-21	Lithium	7439-93-2	E440	47.3 mg/kg	120	70.0	130	----
QC-1718084-003	MRCA-21	Magnesium	7439-95-4	E440	7780 mg/kg	105	70.0	130	----
QC-1718084-003	MRCA-21	Manganese	7439-96-5	E440	8640 mg/kg	98.0	70.0	130	----
QC-1718084-003	MRCA-21	Molybdenum	7439-98-7	E440	25.1 mg/kg	101	70.0	130	----
QC-1718084-003	MRCA-21	Nickel	7440-02-0	E440	1000 mg/kg	99.5	70.0	130	----
QC-1718084-003	MRCA-21	Phosphorus	7723-14-0	E440	660 mg/kg	102	70.0	130	----
QC-1718084-003	MRCA-21	Potassium	7440-09-7	E440	10800 mg/kg	107	70.0	130	----
QC-1718084-003	MRCA-21	Selenium	7782-49-2	E440	1.04 mg/kg	110	60.0	140	----
QC-1718084-003	MRCA-21	Silver	7440-22-4	E440	8.98 mg/kg	100	70.0	130	----
QC-1718084-003	MRCA-21	Sodium	7440-23-5	E440	1770 mg/kg	111	70.0	130	----
QC-1718084-003	MRCA-21	Strontium	7440-24-6	E440	41 mg/kg	103	70.0	130	----
QC-1718084-003	MRCA-21	Sulfur	7704-34-9	E440	3940 mg/kg	104	50.0	150	----
QC-1718084-003	MRCA-21	Thallium	7440-28-0	E440	0.907 mg/kg	103	70.0	130	----
QC-1718084-003	MRCA-21	Tin	7440-31-5	E440	3.79 mg/kg	102	40.0	160	----
QC-1718084-003	MRCA-21	Titanium	7440-32-6	E440	2790 mg/kg	105	70.0	130	----
QC-1718084-003	MRCA-21	Tungsten	7440-33-7	E440	6.99 mg/kg	121	70.0	130	----
QC-1718084-003	MRCA-21	Uranium	7440-61-1	E440	3.97 mg/kg	119	70.0	130	----
QC-1718084-003	MRCA-21	Vanadium	7440-62-2	E440	66.2 mg/kg	101	70.0	130	----

Sub-Matrix:

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Metals (QCLot: 1718084) - continued									
QC-1718084-003	MRCA-21	Zinc	7440-66-6	E440	828 mg/kg	103	70.0	130	----
QC-1718084-003	MRCA-21	Zirconium	7440-67-7	E440	6.91 mg/kg	113	70.0	130	----

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # _____ Page ____ of ____

Report To			
Company:	Covanta Energy		
Contact:	Nicole Victor / Dan Skrypnyk		
Address:	5150 Riverbend Drive		
	Burnaby BC		
Phone:	604-521-1025	Fax:	
		☐ Yes	☐ No

Report Format / Distribution				
☐ Standard	☐ Other			
☑ PDF	☐ Excel	☐ Digital	☐ Fax	
Email 1:	nvictor@covanta.com			
Email 2:	rminchin@covanta.com			
Email 3:	dskrypnyk@covanta.com			
	brent.kirkpatrick@metrovancouver.org			
	Sarah.Wellman@metrovancouver.org			

Service Requested (Rush for routine analysis subject to availability)

- (●) 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

Invoice To	Same as Report ?		
Hardcopy of Invoice with Report?	☐ Yes	☐ No	
Company:			
Contact:			
Address:			
Phone:		Fax:	

Client / Project Information	
Job #:	
PO / AFE:	PO# 46693 Weekly Bottom Ash - Suite
LSD:	(includes 2:1 pH)
Quote #:	

Lab Work Order # (lab use only): CT5271

ALS Contact: | Sampler:

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

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
1	BA2441-A-1	09-Oct-24	9:00	Soil	X	X		X	1
2	BA2441-A-2	09-Oct-24	9:00	Soil	X	X		X	1
3	BA2441-A-3	09-Oct-24	9:00	Soil	X	X		X	1
4	BA2441-A-4	09-Oct-24	9:00	Soil	X	X		X	1
5	BA2441-A-5	09-Oct-24	9:00	Soil	X	X		X	1
6	BA2441-A-6	09-Oct-24	9:00	Soil	X	X		X	1
7	BA2441-A-7	09-Oct-24	9:00	Soil	X	X		X	1
8	BA2441-A-8	09-Oct-24	9:00	Soil	X	X		X	1
9	BA2441-A-9	09-Oct-24	9:00	Soil	X	X		X	1
10	BA2441-A-10	09-Oct-24	9:00	Soil	X	X		X	1
11	BA2441-A-11	09-Oct-24	9:00	Soil	X	X		X	1
12	BA2441-A-12	09-Oct-24	9:00	Soil	X	X		X	1

Environmental Division
Vancouver
Work Order Reference
VA24C7529

Telephone : +1 604 253 4188

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)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
	15-Oct-24	0820		Oct 15th	1:00 PM	17°C/8°C				

No Icepacks

GENF 20.00 Front