

Bottom Ash Data

2025 Week 04

The following analytical report represents bottom ash composite results for week 04 of 2025 (January 19, 2025 to January 25, 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	: VA25A2023		
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	: ----	Date Samples Received	: 29-Jan-2025 12:30
PO	: VANCO0000052919	Date Analysis Commenced	: 30-Jan-2025
C-O-C number	: ----	Issue Date	: 05-Feb-2025 07:56
Sampler	: ----		
Site	: includes 2:1 pH		
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



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	BA2504-A-1	BA2504-A-2	BA2504-A-3	BA2504-A-4	BA2504-A-5
Client sampling date / time					29-Jan-2025 00:00	29-Jan-2025 00:00	29-Jan-2025 00:00	29-Jan-2025 00:00	29-Jan-2025 00:00	
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25A2023-001	VA25A2023-002	VA25A2023-003	VA25A2023-004	VA25A2023-005	
					Result	Result	Result	Result	Result	
Physical Tests										
Moisture	----	E144/VA	0.25	%	19.9	18.3	20.8	20.0	21.1	
pH (1:2 soil:water)	----	E108/VA	0.10	pH units	11.4	11.4	11.4	11.2	11.3	
Metals										
Aluminum	7429-90-5	E440/VA	50	mg/kg	42300	40800	42300	44400	62600	
Antimony	7440-36-0	E440/VA	0.10	mg/kg	140	165	151	131	150	
Arsenic	7440-38-2	E440/VA	0.10	mg/kg	17.7	19.0	14.4	12.2	14.7	
Barium	7440-39-3	E440/VA	0.50	mg/kg	541	478	528	474	631	
Beryllium	7440-41-7	E440/VA	0.10	mg/kg	0.36	0.38	0.33	0.40	0.47	
Bismuth	7440-69-9	E440/VA	0.20	mg/kg	10.8	12.0	10.9	10.9	21.2	
Boron	7440-42-8	E440/VA	5.0	mg/kg	237	201	175	162	214	
Cadmium	7440-43-9	E440/VA	0.020	mg/kg	9.92	13.0	13.5	8.85	9.56	
Calcium	7440-70-2	E440/VA	50	mg/kg	144000	162000	145000	130000	139000	
Chromium	7440-47-3	E440/VA	0.50	mg/kg	168	164	375	123	203	
Cobalt	7440-48-4	E440/VA	0.10	mg/kg	169	229	52.7	52.9	397	
Copper	7440-50-8	E440/VA	0.50	mg/kg	3230	1770	2510	2460	2780	
Iron	7439-89-6	E440/VA	50	mg/kg	51200	58000	49200	43800	50900	
Lead	7439-92-1	E440/VA	0.50	mg/kg	594	440	413	2760	372	
Lithium	7439-93-2	E440/VA	2.0	mg/kg	30.6	36.5	42.2	28.4	32.5	
Magnesium	7439-95-4	E440/VA	20	mg/kg	12200	13500	11900	10900	11700	
Manganese	7439-96-5	E440/VA	1.0	mg/kg	663	882	1270	764	874	
Mercury	7439-97-6	E510/VA	0.0500	mg/kg	<0.0500	0.136	<0.0500	<0.0500	0.0571	



Analytical Results

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

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2504-A-1	BA2504-A-2	BA2504-A-3	BA2504-A-4	BA2504-A-5
Client sampling date / time					29-Jan-2025 00:00	29-Jan-2025 00:00	29-Jan-2025 00:00	29-Jan-2025 00:00	29-Jan-2025 00:00	
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25A2023-001	VA25A2023-002	VA25A2023-003	VA25A2023-004	VA25A2023-005	
					Result	Result	Result	Result	Result	
Metals										
Molybdenum	7439-98-7	E440/VA	0.10	mg/kg	17.0	22.3	16.7	15.2	22.3	
Nickel	7440-02-0	E440/VA	0.50	mg/kg	408	342	405	111	189	
Phosphorus	7723-14-0	E440/VA	50	mg/kg	9660	10500	10400	10100	11700	
Potassium	7440-09-7	E440/VA	100	mg/kg	5660	6740	5970	6290	6230	
Selenium	7782-49-2	E440/VA	0.20	mg/kg	0.43	0.58	0.43	0.36	0.61	
Silver	7440-22-4	E440/VA	0.10	mg/kg	7.12	6.68	10.4	8.35	5.09	
Sodium	7440-23-5	E440/VA	50	mg/kg	18600	20500	18900	18900	19400	
Strontium	7440-24-6	E440/VA	0.50	mg/kg	318	362	302	293	323	
Sulfur	7704-34-9	E440/VA	1000	mg/kg	14400	15900	13400	12400	14400	
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	325	193	137	109	133	
Titanium	7440-32-6	E440/VA	1.0	mg/kg	296	345	359	305	940	
Tungsten	7440-33-7	E440/VA	0.50	mg/kg	4.07	6.82	5.86	4.56	7.33	
Uranium	7440-61-1	E440/VA	0.050	mg/kg	1.55	1.68	1.51	1.56	1.53	
Vanadium	7440-62-2	E440/VA	0.20	mg/kg	31.3	36.4	39.3	28.8	52.9	
Zinc	7440-66-6	E440/VA	2.0	mg/kg	3910	4130	3760	8440	4390	
Zirconium	7440-67-7	E440/VA	1.0	mg/kg	2.3	1.5	2.3	4.7	3.2	
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444/VA	0.010	pH units	11.8	11.7	11.7	11.8	11.8	
pH, TCLP 2nd preliminary	----	EPP444/VA	0.010	pH units	5.71	5.94	5.95	7.08	5.85	
pH, TCLP extraction fluid initial	----	EPP444/VA	0.010	pH units	2.88	2.88	2.88	2.88	2.88	



Analytical Results

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

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2504-A-1	BA2504-A-2	BA2504-A-3	BA2504-A-4	BA2504-A-5
Client sampling date / time					29-Jan-2025 00:00	29-Jan-2025 00:00	29-Jan-2025 00:00	29-Jan-2025 00:00	29-Jan-2025 00:00	
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25A2023-001	VA25A2023-002	VA25A2023-003	VA25A2023-004	VA25A2023-005	
					Result	Result	Result	Result	Result	
TCLP Metals										
pH, TCLP final	----	EPP444/VA	0.010	pH units	7.77	7.10	7.49	7.45	7.99	
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	2.04	2.16	2.27	2.03	1.96	
Cadmium, TCLP	7440-43-9	E444/VA	0.050	mg/L	<0.050	0.129	<0.050	<0.050	<0.050	
Calcium, TCLP	7440-70-2	E444/VA	10	mg/L	2080	2080	2110	2020	1980	
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	0.193	1.30	0.697	0.300	0.121	
Copper, TCLP	7440-50-8	E444/VA	0.050	mg/L	0.710	0.680	0.745	0.662	0.675	
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	126	137	129	127	122	
Mercury, TCLP	7439-97-6	E512/VA	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Nickel, TCLP	7440-02-0	E444/VA	0.25	mg/L	<0.25	0.43	<0.25	<0.25	<0.25	
Selenium, TCLP	7782-49-2	E444/VA	0.10	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	
Silver, TCLP	7440-22-4	E444/VA	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
Thallium, TCLP	7440-28-0	E444/VA	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
Uranium, TCLP	7440-61-1	E444/VA	0.20	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	
Vanadium, TCLP	7440-62-2	E444/VA	0.15	mg/L	<0.15	<0.15	<0.15	<0.15	<0.15	



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2504-A-1	BA2504-A-2	BA2504-A-3	BA2504-A-4	BA2504-A-5
					Client sampling date / time	29-Jan-2025 00:00	29-Jan-2025 00:00	29-Jan-2025 00:00	29-Jan-2025 00:00	29-Jan-2025 00:00
Analyte	CAS Number	Method/Lab	LOR	Unit		VA25A2023-001	VA25A2023-002	VA25A2023-003	VA25A2023-004	VA25A2023-005
						Result	Result	Result	Result	Result
TCLP Metals										
Zinc, TCLP	7440-66-6	E444/VA	0.50	mg/L		<0.50	6.35	1.57	1.52	<0.50
Zirconium, TCLP	7440-67-7	E444/VA	10	mg/L		<10	<10	<10	<10	<10

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

Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2504-A-6	BA2504-A-7	BA2504-A-8	BA2504-A-9	BA2504-A-10
					Client sampling date / time	29-Jan-2025 00:00	29-Jan-2025 00:00	29-Jan-2025 00:00	29-Jan-2025 00:00	29-Jan-2025 00:00
Analyte	CAS Number	Method/Lab	LOR	Unit		VA25A2023-006	VA25A2023-007	VA25A2023-008	VA25A2023-009	VA25A2023-010
						Result	Result	Result	Result	Result
Physical Tests										
Moisture	----	E144/VA	0.25	%		20.1	20.4	19.2	20.6	20.6
pH (1:2 soil:water)	----	E108/VA	0.10	pH units		11.4	11.4	11.3	11.3	11.5
Metals										
Aluminum	7429-90-5	E440/VA	50	mg/kg		37900	59600	48400	37800	38500
Antimony	7440-36-0	E440/VA	0.10	mg/kg		174	125	177	169	141
Arsenic	7440-38-2	E440/VA	0.10	mg/kg		16.9	15.3	18.6	16.4	17.1
Barium	7440-39-3	E440/VA	0.50	mg/kg		439	573	500	513	623
Beryllium	7440-41-7	E440/VA	0.10	mg/kg		0.34	0.36	0.37	0.36	0.32
Bismuth	7440-69-9	E440/VA	0.20	mg/kg		13.7	8.38	13.6	12.4	36.9
Boron	7440-42-8	E440/VA	5.0	mg/kg		196	152	191	182	163
Cadmium	7440-43-9	E440/VA	0.020	mg/kg		14.7	8.69	10.8	16.6	10.7
Calcium	7440-70-2	E440/VA	50	mg/kg		156000	148000	153000	151000	140000



Analytical Results

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

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2504-A-6	BA2504-A-7	BA2504-A-8	BA2504-A-9	BA2504-A-10
Client sampling date / time					29-Jan-2025 00:00	29-Jan-2025 00:00	29-Jan-2025 00:00	29-Jan-2025 00:00	29-Jan-2025 00:00	
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25A2023-006	VA25A2023-007	VA25A2023-008	VA25A2023-009	VA25A2023-010	
					Result	Result	Result	Result	Result	
Metals										
Chromium	7440-47-3	E440/VA	0.50	mg/kg	183	202	172	153	161	
Cobalt	7440-48-4	E440/VA	0.10	mg/kg	122	146	313	106	271	
Copper	7440-50-8	E440/VA	0.50	mg/kg	1850	3380	5010	2080	1310	
Iron	7439-89-6	E440/VA	50	mg/kg	50000	55700	45300	45100	62600	
Lead	7439-92-1	E440/VA	0.50	mg/kg	524	313	1280	681	264	
Lithium	7439-93-2	E440/VA	2.0	mg/kg	40.9	37.6	60.9	29.7	83.5	
Magnesium	7439-95-4	E440/VA	20	mg/kg	12600	12600	12800	12800	11400	
Manganese	7439-96-5	E440/VA	1.0	mg/kg	1290	983	849	1740	1460	
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	19.3	19.0	25.4	18.6	16.5	
Nickel	7440-02-0	E440/VA	0.50	mg/kg	204	191	360	188	189	
Phosphorus	7723-14-0	E440/VA	50	mg/kg	11700	13300	11300	10200	12000	
Potassium	7440-09-7	E440/VA	100	mg/kg	6800	5710	6880	6390	5440	
Selenium	7782-49-2	E440/VA	0.20	mg/kg	0.49	0.44	0.46	0.47	0.64	
Silver	7440-22-4	E440/VA	0.10	mg/kg	7.11	5.30	6.24	7.24	4.16	
Sodium	7440-23-5	E440/VA	50	mg/kg	20700	18900	21300	20500	18000	
Strontium	7440-24-6	E440/VA	0.50	mg/kg	307	308	322	314	274	
Sulfur	7704-34-9	E440/VA	1000	mg/kg	16800	13800	15800	16200	11900	
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	171	136	639	133	148	
Titanium	7440-32-6	E440/VA	1.0	mg/kg	264	411	340	339	295	



Analytical Results

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

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2504-A-6	BA2504-A-7	BA2504-A-8	BA2504-A-9	BA2504-A-10
Client sampling date / time					29-Jan-2025 00:00	29-Jan-2025 00:00	29-Jan-2025 00:00	29-Jan-2025 00:00	29-Jan-2025 00:00	
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25A2023-006	VA25A2023-007	VA25A2023-008	VA25A2023-009	VA25A2023-010	
					Result	Result	Result	Result	Result	
Metals										
Tungsten	7440-33-7	E440/VA	0.50	mg/kg	5.18	5.92	5.10	9.58	4.95	
Uranium	7440-61-1	E440/VA	0.050	mg/kg	1.67	1.74	1.65	1.69	1.53	
Vanadium	7440-62-2	E440/VA	0.20	mg/kg	33.2	36.5	32.9	41.3	32.2	
Zinc	7440-66-6	E440/VA	2.0	mg/kg	4230	3100	5640	5050	3020	
Zirconium	7440-67-7	E440/VA	1.0	mg/kg	1.2	2.8	2.8	1.6	8.7	
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444/VA	0.010	pH units	11.7	11.7	11.8	11.7	11.7	
pH, TCLP 2nd preliminary	----	EPP444/VA	0.010	pH units	5.90	6.15	5.99	5.69	6.00	
pH, TCLP extraction fluid initial	----	EPP444/VA	0.010	pH units	2.88	2.88	2.88	2.88	2.88	
pH, TCLP final	----	EPP444/VA	0.010	pH units	7.68	7.75	7.89	7.85	8.01	
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	2.02	2.03	2.04	1.97	2.08	
Cadmium, TCLP	7440-43-9	E444/VA	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
Calcium, TCLP	7440-70-2	E444/VA	10	mg/L	1960	1980	1980	1980	2000	
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	0.343	0.240	0.271	0.213	0.139	
Copper, TCLP	7440-50-8	E444/VA	0.050	mg/L	0.667	0.652	0.677	0.675	0.734	
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	BA2504-A-6	BA2504-A-7	BA2504-A-8	BA2504-A-9	BA2504-A-10
					Client sampling date / time	29-Jan-2025 00:00	29-Jan-2025 00:00	29-Jan-2025 00:00	29-Jan-2025 00:00	29-Jan-2025 00:00
Analyte	CAS Number	Method/Lab	LOR	Unit		VA25A2023-006	VA25A2023-007	VA25A2023-008	VA25A2023-009	VA25A2023-010
						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		127	130	128	130	127
Mercury, TCLP	7439-97-6	E512/VA	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Nickel, TCLP	7440-02-0	E444/VA	0.25	mg/L		<0.25	<0.25	<0.25	<0.25	<0.25
Selenium, TCLP	7782-49-2	E444/VA	0.10	mg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Silver, TCLP	7440-22-4	E444/VA	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Thallium, TCLP	7440-28-0	E444/VA	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Uranium, TCLP	7440-61-1	E444/VA	0.20	mg/L		<0.20	<0.20	<0.20	<0.20	<0.20
Vanadium, TCLP	7440-62-2	E444/VA	0.15	mg/L		<0.15	<0.15	<0.15	<0.15	<0.15
Zinc, TCLP	7440-66-6	E444/VA	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Zirconium, TCLP	7440-67-7	E444/VA	10	mg/L		<10	<10	<10	<10	<10

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

Analytical Results

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

					Client sample ID	BA2504-A-11	BA2504-A-12	----	----	----
					Client sampling date / time	29-Jan-2025 00:00	29-Jan-2025 00:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		VA25A2023-011	VA25A2023-012	----	----	----
						Result	Result	----	----	----
Physical Tests										
Moisture	----	E144/VA	0.25	%		20.1	20.6	----	----	----
pH (1:2 soil:water)	----	E108/VA	0.10	pH units		11.4	11.4	----	----	----



Analytical Results

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

					Client sample ID	BA2504-A-11	BA2504-A-12	----	----	----
					Client sampling date / time	29-Jan-2025 00:00	29-Jan-2025 00:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25A2023-011	VA25A2023-012	----	----	----	----
					Result	Result	----	----	----	----
Metals										
Aluminum	7429-90-5	E440/VA	50	mg/kg	38700	38200	----	----	----	----
Antimony	7440-36-0	E440/VA	0.10	mg/kg	166	152	----	----	----	----
Arsenic	7440-38-2	E440/VA	0.10	mg/kg	15.4	27.2	----	----	----	----
Barium	7440-39-3	E440/VA	0.50	mg/kg	463	444	----	----	----	----
Beryllium	7440-41-7	E440/VA	0.10	mg/kg	0.37	0.33	----	----	----	----
Bismuth	7440-69-9	E440/VA	0.20	mg/kg	12.8	11.0	----	----	----	----
Boron	7440-42-8	E440/VA	5.0	mg/kg	213	167	----	----	----	----
Cadmium	7440-43-9	E440/VA	0.020	mg/kg	11.8	9.12	----	----	----	----
Calcium	7440-70-2	E440/VA	50	mg/kg	156000	157000	----	----	----	----
Chromium	7440-47-3	E440/VA	0.50	mg/kg	156	148	----	----	----	----
Cobalt	7440-48-4	E440/VA	0.10	mg/kg	354	235	----	----	----	----
Copper	7440-50-8	E440/VA	0.50	mg/kg	1690	1490	----	----	----	----
Iron	7439-89-6	E440/VA	50	mg/kg	42200	49200	----	----	----	----
Lead	7439-92-1	E440/VA	0.50	mg/kg	422	368	----	----	----	----
Lithium	7439-93-2	E440/VA	2.0	mg/kg	45.2	40.3	----	----	----	----
Magnesium	7439-95-4	E440/VA	20	mg/kg	13800	12800	----	----	----	----
Manganese	7439-96-5	E440/VA	1.0	mg/kg	848	610	----	----	----	----
Mercury	7439-97-6	E510/VA	0.0500	mg/kg	<0.0500	0.0894	----	----	----	----
Molybdenum	7439-98-7	E440/VA	0.10	mg/kg	18.3	16.3	----	----	----	----
Nickel	7440-02-0	E440/VA	0.50	mg/kg	226	167	----	----	----	----
Phosphorus	7723-14-0	E440/VA	50	mg/kg	13400	13700	----	----	----	----



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2504-A-11	BA2504-A-12	----	----	----
Client sampling date / time						29-Jan-2025 00:00	29-Jan-2025 00:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25A2023-011	VA25A2023-012	----	----	----	----
					Result	Result	----	----	----	----
Metals										
Potassium	7440-09-7	E440/VA	100	mg/kg	6860	5640	----	----	----	----
Selenium	7782-49-2	E440/VA	0.20	mg/kg	0.49	0.43	----	----	----	----
Silver	7440-22-4	E440/VA	0.10	mg/kg	4.70	4.93	----	----	----	----
Sodium	7440-23-5	E440/VA	50	mg/kg	22000	18300	----	----	----	----
Strontium	7440-24-6	E440/VA	0.50	mg/kg	313	309	----	----	----	----
Sulfur	7704-34-9	E440/VA	1000	mg/kg	16000	14600	----	----	----	----
Thallium	7440-28-0	E440/VA	0.050	mg/kg	<0.050	<0.050	----	----	----	----
Tin	7440-31-5	E440/VA	2.0	mg/kg	169	222	----	----	----	----
Titanium	7440-32-6	E440/VA	1.0	mg/kg	304	192	----	----	----	----
Tungsten	7440-33-7	E440/VA	0.50	mg/kg	6.30	6.36	----	----	----	----
Uranium	7440-61-1	E440/VA	0.050	mg/kg	1.72	1.54	----	----	----	----
Vanadium	7440-62-2	E440/VA	0.20	mg/kg	30.2	33.2	----	----	----	----
Zinc	7440-66-6	E440/VA	2.0	mg/kg	3870	4390	----	----	----	----
Zirconium	7440-67-7	E440/VA	1.0	mg/kg	1.6	3.0	----	----	----	----
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444/VA	0.010	pH units	11.7	11.7	----	----	----	----
pH, TCLP 2nd preliminary	----	EPP444/VA	0.010	pH units	5.74	5.87	----	----	----	----
pH, TCLP extraction fluid initial	----	EPP444/VA	0.010	pH units	2.88	2.88	----	----	----	----
pH, TCLP final	----	EPP444/VA	0.010	pH units	8.01	7.74	----	----	----	----
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	BA2504-A-11	BA2504-A-12	----	----	----
					Client sampling date / time	29-Jan-2025 00:00	29-Jan-2025 00:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25A2023-011	VA25A2023-012	----	----	----	----
					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	2.04	2.03	----	----	----	----
Cadmium, TCLP	7440-43-9	E444/VA	0.050	mg/L	<0.050	<0.050	----	----	----	----
Calcium, TCLP	7440-70-2	E444/VA	10	mg/L	1990	1940	----	----	----	----
Chromium, TCLP	7440-47-3	E444/VA	0.25	mg/L	<0.25	<0.25	----	----	----	----
Cobalt, TCLP	7440-48-4	E444/VA	0.050	mg/L	0.124	0.271	----	----	----	----
Copper, TCLP	7440-50-8	E444/VA	0.050	mg/L	0.781	0.692	----	----	----	----
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	126	122	----	----	----	----
Mercury, TCLP	7439-97-6	E512/VA	0.0010	mg/L	<0.0010	<0.0010	----	----	----	----
Nickel, TCLP	7440-02-0	E444/VA	0.25	mg/L	<0.25	<0.25	----	----	----	----
Selenium, TCLP	7782-49-2	E444/VA	0.10	mg/L	<0.10	<0.10	----	----	----	----
Silver, TCLP	7440-22-4	E444/VA	0.050	mg/L	<0.050	<0.050	----	----	----	----
Thallium, TCLP	7440-28-0	E444/VA	1.0	mg/L	<1.0	<1.0	----	----	----	----
Uranium, TCLP	7440-61-1	E444/VA	0.20	mg/L	<0.20	<0.20	----	----	----	----
Vanadium, TCLP	7440-62-2	E444/VA	0.15	mg/L	<0.15	<0.15	----	----	----	----
Zinc, TCLP	7440-66-6	E444/VA	0.50	mg/L	<0.50	<0.50	----	----	----	----
Zirconium, TCLP	7440-67-7	E444/VA	10	mg/L	<10	<10	----	----	----	----

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA25A2023	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	: ----	Date Samples Received	: 29-Jan-2025 12:30
PO	: VANCO0000052919	Issue Date	: 05-Feb-2025 07:56
C-O-C number	: ----		
Sampler	: ----		
Site	: includes 2:1 pH		
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

- Reference Material (RM) Sample outliers occur - please see the following pages for full details.

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	VA25A2023-001	BA2504-A-1	Bismuth	7440-69-9	E440	40.1 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA25A2023-001	BA2504-A-1	Cobalt	7440-48-4	E440	53.0 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA25A2023-001	BA2504-A-1	Copper	7440-50-8	E440	41.6 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA25A2023-001	BA2504-A-1	Manganese	7439-96-5	E440	34.1 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA25A2023-001	BA2504-A-1	Molybdenum	7439-98-7	E440	47.0 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.
Metals	VA25A2023-001	BA2504-A-1	Nickel	7440-02-0	E440	51.2 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA25A2023-001	BA2504-A-1	Tin	7440-31-5	E440	53.6 % 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.

Reference Material (RM) Sample								
Metals	QC-MRG2-1859898 003	----	Bismuth	7440-69-9	E440	137 % MES	70.0-130%	Recovery greater than upper control limit

Result Qualifiers

Qualifier Description

MES Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



Analysis Holding Time Compliance

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

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

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

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

Matrix: **Soil/Solid**

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

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2504-A-1	E510	29-Jan-2025	03-Feb-2025	28 days	6 days	✓	03-Feb-2025	28 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2504-A-10	E510	29-Jan-2025	03-Feb-2025	28 days	6 days	✓	03-Feb-2025	28 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2504-A-11	E510	29-Jan-2025	03-Feb-2025	28 days	6 days	✓	03-Feb-2025	28 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2504-A-12	E510	29-Jan-2025	03-Feb-2025	28 days	6 days	✓	03-Feb-2025	28 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2504-A-2	E510	29-Jan-2025	03-Feb-2025	28 days	6 days	✓	03-Feb-2025	28 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2504-A-3	E510	29-Jan-2025	03-Feb-2025	28 days	6 days	✓	03-Feb-2025	28 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2504-A-4	E510	29-Jan-2025	03-Feb-2025	28 days	6 days	✓	03-Feb-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 BA2504-A-5	E510	29-Jan-2025	03-Feb-2025	28 days	6 days	✓	03-Feb-2025	28 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2504-A-6	E510	29-Jan-2025	03-Feb-2025	28 days	6 days	✓	03-Feb-2025	28 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2504-A-7	E510	29-Jan-2025	03-Feb-2025	28 days	6 days	✓	03-Feb-2025	28 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2504-A-8	E510	29-Jan-2025	03-Feb-2025	28 days	6 days	✓	03-Feb-2025	28 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2504-A-9	E510	29-Jan-2025	03-Feb-2025	28 days	6 days	✓	03-Feb-2025	28 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2504-A-1	E440	29-Jan-2025	03-Feb-2025	180 days	6 days	✓	04-Feb-2025	180 days	6 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2504-A-10	E440	29-Jan-2025	03-Feb-2025	180 days	6 days	✓	04-Feb-2025	180 days	6 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2504-A-11	E440	29-Jan-2025	03-Feb-2025	180 days	6 days	✓	04-Feb-2025	180 days	6 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2504-A-12	E440	29-Jan-2025	03-Feb-2025	180 days	6 days	✓	04-Feb-2025	180 days	6 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	
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2504-A-2	E440	29-Jan-2025	03-Feb-2025	180 days	6 days	✓	04-Feb-2025	180 days	6 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2504-A-3	E440	29-Jan-2025	03-Feb-2025	180 days	6 days	✓	04-Feb-2025	180 days	6 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2504-A-4	E440	29-Jan-2025	03-Feb-2025	180 days	6 days	✓	04-Feb-2025	180 days	6 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2504-A-5	E440	29-Jan-2025	03-Feb-2025	180 days	6 days	✓	04-Feb-2025	180 days	6 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2504-A-6	E440	29-Jan-2025	03-Feb-2025	180 days	6 days	✓	04-Feb-2025	180 days	6 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2504-A-7	E440	29-Jan-2025	03-Feb-2025	180 days	6 days	✓	04-Feb-2025	180 days	6 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2504-A-8	E440	29-Jan-2025	03-Feb-2025	180 days	6 days	✓	04-Feb-2025	180 days	6 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2504-A-9	E440	29-Jan-2025	03-Feb-2025	180 days	6 days	✓	04-Feb-2025	180 days	6 days	✓
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2504-A-1	E144	29-Jan-2025	----	----	----		01-Feb-2025	----	3 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 BA2504-A-10	E144	29-Jan-2025	----	----	----		01-Feb-2025	----	3 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2504-A-11	E144	29-Jan-2025	----	----	----		01-Feb-2025	----	3 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2504-A-12	E144	29-Jan-2025	----	----	----		01-Feb-2025	----	3 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2504-A-2	E144	29-Jan-2025	----	----	----		01-Feb-2025	----	3 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2504-A-3	E144	29-Jan-2025	----	----	----		01-Feb-2025	----	3 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2504-A-4	E144	29-Jan-2025	----	----	----		01-Feb-2025	----	3 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2504-A-5	E144	29-Jan-2025	----	----	----		01-Feb-2025	----	3 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2504-A-6	E144	29-Jan-2025	----	----	----		01-Feb-2025	----	3 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2504-A-7	E144	29-Jan-2025	----	----	----		01-Feb-2025	----	3 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 BA2504-A-8	E144	29-Jan-2025	----	----	----		01-Feb-2025	----	3 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2504-A-9	E144	29-Jan-2025	----	----	----		01-Feb-2025	----	3 days	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2504-A-1	E108	29-Jan-2025	03-Feb-2025	30 days	6 days	✓	05-Feb-2025	30 days	7 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2504-A-10	E108	29-Jan-2025	03-Feb-2025	30 days	6 days	✓	05-Feb-2025	30 days	7 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2504-A-11	E108	29-Jan-2025	03-Feb-2025	30 days	6 days	✓	05-Feb-2025	30 days	7 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2504-A-12	E108	29-Jan-2025	03-Feb-2025	30 days	6 days	✓	05-Feb-2025	30 days	7 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2504-A-2	E108	29-Jan-2025	03-Feb-2025	30 days	6 days	✓	05-Feb-2025	30 days	7 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2504-A-3	E108	29-Jan-2025	03-Feb-2025	30 days	6 days	✓	05-Feb-2025	30 days	7 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2504-A-4	E108	29-Jan-2025	03-Feb-2025	30 days	6 days	✓	05-Feb-2025	30 days	7 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 : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2504-A-5	E108	29-Jan-2025	03-Feb-2025	30 days	6 days	✓	05-Feb-2025	30 days	7 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2504-A-6	E108	29-Jan-2025	03-Feb-2025	30 days	6 days	✓	05-Feb-2025	30 days	7 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2504-A-7	E108	29-Jan-2025	03-Feb-2025	30 days	6 days	✓	05-Feb-2025	30 days	7 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2504-A-8	E108	29-Jan-2025	03-Feb-2025	30 days	6 days	✓	05-Feb-2025	30 days	7 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2504-A-9	E108	29-Jan-2025	03-Feb-2025	30 days	6 days	✓	05-Feb-2025	30 days	7 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2504-A-1	E512	30-Jan-2025	31-Jan-2025	29 days	3 days	✓	31-Jan-2025	29 days	3 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2504-A-10	E512	30-Jan-2025	31-Jan-2025	29 days	3 days	✓	31-Jan-2025	29 days	3 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2504-A-11	E512	30-Jan-2025	31-Jan-2025	29 days	3 days	✓	31-Jan-2025	29 days	3 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2504-A-12	E512	30-Jan-2025	31-Jan-2025	29 days	3 days	✓	31-Jan-2025	29 days	3 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) BA2504-A-2	E512	30-Jan-2025	31-Jan-2025	29 days	3 days	✓	31-Jan-2025	29 days	3 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2504-A-3	E512	30-Jan-2025	31-Jan-2025	29 days	3 days	✓	31-Jan-2025	29 days	3 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2504-A-4	E512	30-Jan-2025	31-Jan-2025	29 days	3 days	✓	31-Jan-2025	29 days	3 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2504-A-5	E512	30-Jan-2025	31-Jan-2025	29 days	3 days	✓	31-Jan-2025	29 days	3 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2504-A-6	E512	30-Jan-2025	31-Jan-2025	29 days	3 days	✓	31-Jan-2025	29 days	3 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2504-A-7	E512	30-Jan-2025	31-Jan-2025	29 days	3 days	✓	31-Jan-2025	29 days	3 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2504-A-8	E512	30-Jan-2025	31-Jan-2025	29 days	3 days	✓	31-Jan-2025	29 days	3 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2504-A-9	E512	30-Jan-2025	31-Jan-2025	29 days	3 days	✓	31-Jan-2025	29 days	3 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2504-A-1	E444	30-Jan-2025	31-Jan-2025	181 days	3 days	✓	03-Feb-2025	181 days	5 days	✓



Matrix: Soil/Solid

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

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2504-A-10	E444	30-Jan-2025	31-Jan-2025	181 days	3 days	✓	03-Feb-2025	181 days	5 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2504-A-11	E444	30-Jan-2025	31-Jan-2025	181 days	3 days	✓	03-Feb-2025	181 days	5 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2504-A-12	E444	30-Jan-2025	31-Jan-2025	181 days	3 days	✓	03-Feb-2025	181 days	5 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2504-A-2	E444	30-Jan-2025	31-Jan-2025	181 days	3 days	✓	03-Feb-2025	181 days	5 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2504-A-3	E444	30-Jan-2025	31-Jan-2025	181 days	3 days	✓	03-Feb-2025	181 days	5 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2504-A-4	E444	30-Jan-2025	31-Jan-2025	181 days	3 days	✓	03-Feb-2025	181 days	5 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2504-A-5	E444	30-Jan-2025	31-Jan-2025	181 days	3 days	✓	03-Feb-2025	181 days	5 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2504-A-6	E444	30-Jan-2025	31-Jan-2025	181 days	3 days	✓	03-Feb-2025	181 days	5 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2504-A-7	E444	30-Jan-2025	31-Jan-2025	181 days	3 days	✓	03-Feb-2025	181 days	5 days	✓



Matrix: Soil/Solid

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

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2504-A-8	E444	30-Jan-2025	31-Jan-2025	181 days	3 days	✓	03-Feb-2025	181 days	5 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2504-A-9	E444	30-Jan-2025	31-Jan-2025	181 days	3 days	✓	03-Feb-2025	181 days	5 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2504-A-1	EPP444	29-Jan-2025	30-Jan-2025	----	----		----	28 days	1 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2504-A-10	EPP444	29-Jan-2025	30-Jan-2025	----	----		----	28 days	1 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2504-A-11	EPP444	29-Jan-2025	30-Jan-2025	----	----		----	28 days	1 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2504-A-12	EPP444	29-Jan-2025	30-Jan-2025	----	----		----	28 days	1 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2504-A-2	EPP444	29-Jan-2025	30-Jan-2025	----	----		----	28 days	1 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2504-A-3	EPP444	29-Jan-2025	30-Jan-2025	----	----		----	28 days	1 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2504-A-4	EPP444	29-Jan-2025	30-Jan-2025	----	----		----	28 days	1 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) BA2504-A-5	EPP444	29-Jan-2025	30-Jan-2025	----	----		----	28 days	1 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2504-A-6	EPP444	29-Jan-2025	30-Jan-2025	----	----		----	28 days	1 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2504-A-7	EPP444	29-Jan-2025	30-Jan-2025	----	----		----	28 days	1 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2504-A-8	EPP444	29-Jan-2025	30-Jan-2025	----	----		----	28 days	1 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2504-A-9	EPP444	29-Jan-2025	30-Jan-2025	----	----		----	28 days	1 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	1859493	1	12	8.3	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	1859898	1	12	8.3	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	1859494	1	12	8.3	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	1859899	1	13	7.6	5.0	✓
Moisture Content by Gravimetry	E144	1859901	1	12	8.3	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	1859900	1	13	7.6	5.0	✓
Laboratory Control Samples (LCS)							
Mercury in Soil/Solid by CVAAS	E510	1859898	2	12	16.6	10.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	1859899	2	13	15.3	10.0	✓
Moisture Content by Gravimetry	E144	1859901	1	12	8.3	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	1859900	1	13	7.6	5.0	✓
Method Blanks (MB)							
Mercury by CVAAS (TCLP)	E512	1859493	1	12	8.3	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	1859898	1	12	8.3	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	1859494	1	12	8.3	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	1859899	1	13	7.6	5.0	✓
Moisture Content by Gravimetry	E144	1859901	1	12	8.3	5.0	✓
Matrix Spikes (MS)							
Mercury by CVAAS (TCLP)	E512	1859493	1	12	8.3	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	1859494	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.

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 Work Order : VA25A2023
 Client : Reworld Renewable Burnaby, ULC
 Project : ----



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Digestion for Metals and Mercury	EP440 ALS Environmental - Vancouver	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO 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	: VA25A2023	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	: ----	Date Samples Received	: 29-Jan-2025 12:30
PO	: VANCO0000052919	Date Analysis Commenced	: 30-Jan-2025
C-O-C number	: ----	Issue Date	: 05-Feb-2025 07:56
Sampler	: ----		
Site	: includes 2:1 pH		
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



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).

					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: 1859900)											
VA25A2023-001	BA2504-A-1	pH (1:2 soil:water)	----	E108	0.10	pH units	11.4	11.2	1.8%	5%	----
Physical Tests (QC Lot: 1859901)											
VA25A2023-001	BA2504-A-1	Moisture	----	E144	0.25	%	19.9	20.5	3.35%	20%	----
Metals (QC Lot: 1859898)											
VA25A2023-001	BA2504-A-1	Mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	0	Diff <2x LOR	----
Metals (QC Lot: 1859899)											
VA25A2023-001	BA2504-A-1	Aluminum	7429-90-5	E440	50	mg/kg	42300	53300	22.9%	40%	----
		Antimony	7440-36-0	E440	0.10	mg/kg	140	142	1.46%	30%	----
		Arsenic	7440-38-2	E440	0.10	mg/kg	17.7	13.4	27.5%	30%	----
		Barium	7440-39-3	E440	0.50	mg/kg	541	450	18.4%	40%	----
		Beryllium	7440-41-7	E440	0.10	mg/kg	0.36	0.34	0.02	Diff <2x LOR	----
		Bismuth	7440-69-9	E440	0.20	mg/kg	10.8	16.3	40.1%	30%	DUP-H
		Boron	7440-42-8	E440	5.0	mg/kg	237	183	25.3%	30%	----
		Cadmium	7440-43-9	E440	0.020	mg/kg	9.92	12.9	26.0%	30%	----
		Calcium	7440-70-2	E440	50	mg/kg	144000	150000	4.02%	30%	----
		Chromium	7440-47-3	E440	0.50	mg/kg	168	159	5.30%	30%	----
		Cobalt	7440-48-4	E440	0.10	mg/kg	169	291	53.0%	30%	DUP-H
		Copper	7440-50-8	E440	0.50	mg/kg	3230	2120	41.6%	30%	DUP-H
		Iron	7439-89-6	E440	50	mg/kg	51200	45000	12.7%	30%	----
		Lead	7439-92-1	E440	0.50	mg/kg	594	451	27.4%	40%	----
		Lithium	7439-93-2	E440	2.0	mg/kg	30.6	40.4	27.8%	30%	----
		Magnesium	7439-95-4	E440	20	mg/kg	12200	12800	4.82%	30%	----
		Manganese	7439-96-5	E440	1.0	mg/kg	663	935	34.1%	30%	DUP-H
		Molybdenum	7439-98-7	E440	0.10	mg/kg	17.0	27.5	47.0%	40%	DUP-H
		Nickel	7440-02-0	E440	0.50	mg/kg	408	242	51.2%	30%	DUP-H
		Phosphorus	7723-14-0	E440	50	mg/kg	9660	12600	26.8%	30%	----
		Potassium	7440-09-7	E440	100	mg/kg	5660	6170	8.62%	40%	----
		Selenium	7782-49-2	E440	0.20	mg/kg	0.43	0.46	0.02	Diff <2x LOR	----
		Silver	7440-22-4	E440	0.10	mg/kg	7.12	6.66	6.68%	40%	----
		Sodium	7440-23-5	E440	50	mg/kg	18600	20200	8.38%	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: 1859899) - continued											
VA25A2023-001	BA2504-A-1	Strontium	7440-24-6	E440	0.50	mg/kg	318	348	8.88%	40%	----
		Sulfur	7704-34-9	E440	1000	mg/kg	14400	13600	5.72%	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	325	188	53.6%	40%	DUP-H
		Titanium	7440-32-6	E440	1.0	mg/kg	296	265	11.0%	40%	----
		Tungsten	7440-33-7	E440	0.50	mg/kg	4.07	4.66	13.6%	30%	----
		Uranium	7440-61-1	E440	0.050	mg/kg	1.55	1.59	2.31%	30%	----
		Vanadium	7440-62-2	E440	0.20	mg/kg	31.3	32.9	4.94%	30%	----
		Zinc	7440-66-6	E440	2.0	mg/kg	3910	4250	8.30%	30%	----
		Zirconium	7440-67-7	E440	1.0	mg/kg	2.3	2.0	0.3	Diff <2x LOR	----
TCLP Metals (QC Lot: 1859493)											
VA25A2023-001	BA2504-A-1	Mercury, TCLP	7439-97-6	E512	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
TCLP Metals (QC Lot: 1859494)											
VA25A2023-001	BA2504-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	2.04	1.96	0.08	Diff <2x LOR	----
		Cadmium, TCLP	7440-43-9	E444	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Calcium, TCLP	7440-70-2	E444	10	mg/L	2080	2020	3.04%	30%	----
		Chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	<0.25	0	Diff <2x LOR	----
		Cobalt, TCLP	7440-48-4	E444	0.050	mg/L	0.193	0.187	0.006	Diff <2x LOR	----
		Copper, TCLP	7440-50-8	E444	0.050	mg/L	0.710	0.681	4.11%	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	126	124	0.868%	30%	----
		Nickel, TCLP	7440-02-0	E444	0.25	mg/L	<0.25	<0.25	0	Diff <2x LOR	----
		Selenium, TCLP	7782-49-2	E444	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
		Silver, TCLP	7440-22-4	E444	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Thallium, TCLP	7440-28-0	E444	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Uranium, TCLP	7440-61-1	E444	0.20	mg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	<0.15	0	Diff <2x LOR	----
		Zinc, TCLP	7440-66-6	E444	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Zirconium, TCLP	7440-67-7	E444	10	mg/L	<10	<10	0	Diff <2x LOR	----



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: 1859901)						
Moisture	----	E144	0.25	%	<0.25	----
Metals (QCLot: 1859898)						
Mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 1859899)						
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: 1859899) - 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: 1859493)						
Mercury, TCLP	7439-97-6	E512	0.001	mg/L	<0.0010	----
TCLP Metals (QCLot: 1859494)						
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: 1859900)									
pH (1:2 soil:water)	----	E108	----	pH units	6 pH units	101	95.0	105	----
Physical Tests (QCLot: 1859901)									
Moisture	----	E144	0.25	%	50 %	100	90.0	110	----
Metals (QCLot: 1859898)									
Mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	84.0	80.0	120	----
Metals (QCLot: 1859899)									
Aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	99.4	80.0	120	----
Antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	106	80.0	120	----
Arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	104	80.0	120	----
Barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	103	80.0	120	----
Beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	98.6	80.0	120	----
Bismuth	7440-69-9	E440	0.2	mg/kg	100 mg/kg	96.9	80.0	120	----
Boron	7440-42-8	E440	5	mg/kg	100 mg/kg	98.8	80.0	120	----
Cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	99.7	80.0	120	----
Calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	99.2	80.0	120	----
Chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	100	80.0	120	----
Cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	98.0	80.0	120	----
Copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	96.5	80.0	120	----
Iron	7439-89-6	E440	50	mg/kg	100 mg/kg	100	80.0	120	----
Lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	97.8	80.0	120	----
Lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	103	80.0	120	----
Magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	102	80.0	120	----
Manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	97.0	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	99.3	80.0	120	----
Phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	101	80.0	120	----
Potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	98.4	80.0	120	----
Selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	99.0	80.0	120	----
Silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	96.0	80.0	120	----
Sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	97.5	80.0	120	----
Strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	104	80.0	120	----
Sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	96.9	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: 1859899) - continued									
Thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	95.6	80.0	120	----
Tin	7440-31-5	E440	2	mg/kg	50 mg/kg	100	80.0	120	----
Titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	96.7	80.0	120	----
Tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	99.9	80.0	120	----
Uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	101	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	96.2	80.0	120	----
Zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	92.2	80.0	120	----



Matrix Spike (MS) Report

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

Sub-Matrix: Soil/Solid

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
TCLP Metals (QCLot: 1859493)										
VA25A2023-001	BA2504-A-1	Mercury, TCLP	7439-97-6	E512	0.0010 mg/L	0.001 mg/L	98.1	50.0	140	----
TCLP Metals (QCLot: 1859494)										
VA25A2023-001	BA2504-A-1	Antimony, TCLP	7440-36-0	E444	5.01 mg/L	5 mg/L	100	50.0	140	----
		Arsenic, TCLP	7440-38-2	E444	5.1 mg/L	5 mg/L	101	50.0	140	----
		Barium, TCLP	7440-39-3	E444	12.6 mg/L	12.5 mg/L	101	50.0	140	----
		Beryllium, TCLP	7440-41-7	E444	0.249 mg/L	0.25 mg/L	99.4	50.0	140	----
		Boron, TCLP	7440-42-8	E444	9.25 mg/L	10 mg/L	92.5	50.0	140	----
		Cadmium, TCLP	7440-43-9	E444	0.243 mg/L	0.25 mg/L	97.4	50.0	140	----
		Calcium, TCLP	7440-70-2	E444	ND mg/L	----	ND	50.0	140	----
		Chromium, TCLP	7440-47-3	E444	1.22 mg/L	1.25 mg/L	97.7	50.0	140	----
		Cobalt, TCLP	7440-48-4	E444	0.240 mg/L	0.25 mg/L	96.0	50.0	140	----
		Copper, TCLP	7440-50-8	E444	2.33 mg/L	2.5 mg/L	93.3	50.0	140	----
		Iron, TCLP	7439-89-6	E444	240 mg/L	250 mg/L	96.2	50.0	140	----
		Lead, TCLP	7439-92-1	E444	9.66 mg/L	10 mg/L	96.6	50.0	140	----
		Magnesium, TCLP	7439-95-4	E444	233 mg/L	250 mg/L	93.2	50.0	140	----
		Nickel, TCLP	7440-02-0	E444	2.38 mg/L	2.5 mg/L	95.4	50.0	140	----
		Selenium, TCLP	7782-49-2	E444	4.94 mg/L	5 mg/L	98.8	50.0	140	----
		Silver, TCLP	7440-22-4	E444	0.077 mg/L	0.1 mg/L	76.8	50.0	140	----
		Thallium, TCLP	7440-28-0	E444	4.8 mg/L	5 mg/L	95.2	50.0	140	----
		Uranium, TCLP	7440-61-1	E444	4.89 mg/L	5 mg/L	97.8	50.0	150	----
		Vanadium, TCLP	7440-62-2	E444	0.75 mg/L	0.75 mg/L	99.6	50.0	140	----
		Zinc, TCLP	7440-66-6	E444	9.30 mg/L	10 mg/L	93.0	50.0	140	----
		Zirconium, TCLP	7440-67-7	E444	0.8 mg/L	1 mg/L	84.9	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: 1859898)									
QC-1859898-003	MRCA-21	Mercury	7439-97-6	E510	0.068 mg/kg	89.6	70.0	130	----
Metals (QCLot: 1859899)									
QC-1859899-003	MRCA-21	Aluminum	7429-90-5	E440	22500 mg/kg	108	70.0	130	----
QC-1859899-003	MRCA-21	Antimony	7440-36-0	E440	24.8 mg/kg	102	70.0	130	----
QC-1859899-003	MRCA-21	Arsenic	7440-38-2	E440	21.2 mg/kg	101	70.0	130	----
QC-1859899-003	MRCA-21	Barium	7440-39-3	E440	788 mg/kg	105	70.0	130	----
QC-1859899-003	MRCA-21	Beryllium	7440-41-7	E440	1.82 mg/kg	109	70.0	130	----
QC-1859899-003	MRCA-21	Bismuth	7440-69-9	E440	1.78 mg/kg	# 137	70.0	130	MES
QC-1859899-003	MRCA-21	Cadmium	7440-43-9	E440	2.15 mg/kg	106	70.0	130	----
QC-1859899-003	MRCA-21	Calcium	7440-70-2	E440	4900 mg/kg	107	70.0	130	----
QC-1859899-003	MRCA-21	Chromium	7440-47-3	E440	56.9 mg/kg	105	70.0	130	----
QC-1859899-003	MRCA-21	Cobalt	7440-48-4	E440	32 mg/kg	101	70.0	130	----
QC-1859899-003	MRCA-21	Copper	7440-50-8	E440	969 mg/kg	103	70.0	130	----
QC-1859899-003	MRCA-21	Iron	7439-89-6	E440	32700 mg/kg	106	70.0	130	----
QC-1859899-003	MRCA-21	Lead	7439-92-1	E440	919 mg/kg	100	70.0	130	----
QC-1859899-003	MRCA-21	Lithium	7439-93-2	E440	47.3 mg/kg	115	70.0	130	----
QC-1859899-003	MRCA-21	Magnesium	7439-95-4	E440	7780 mg/kg	104	70.0	130	----
QC-1859899-003	MRCA-21	Manganese	7439-96-5	E440	8640 mg/kg	98.7	70.0	130	----
QC-1859899-003	MRCA-21	Molybdenum	7439-98-7	E440	25.1 mg/kg	106	70.0	130	----
QC-1859899-003	MRCA-21	Nickel	7440-02-0	E440	1000 mg/kg	103	70.0	130	----
QC-1859899-003	MRCA-21	Phosphorus	7723-14-0	E440	660 mg/kg	107	70.0	130	----
QC-1859899-003	MRCA-21	Potassium	7440-09-7	E440	10800 mg/kg	103	70.0	130	----
QC-1859899-003	MRCA-21	Selenium	7782-49-2	E440	1.04 mg/kg	104	60.0	140	----
QC-1859899-003	MRCA-21	Silver	7440-22-4	E440	8.98 mg/kg	104	70.0	130	----
QC-1859899-003	MRCA-21	Sodium	7440-23-5	E440	1770 mg/kg	116	70.0	130	----
QC-1859899-003	MRCA-21	Strontium	7440-24-6	E440	41 mg/kg	109	70.0	130	----
QC-1859899-003	MRCA-21	Sulfur	7704-34-9	E440	3940 mg/kg	88.2	50.0	150	----
QC-1859899-003	MRCA-21	Thallium	7440-28-0	E440	0.907 mg/kg	102	70.0	130	----
QC-1859899-003	MRCA-21	Tin	7440-31-5	E440	3.79 mg/kg	103	40.0	160	----
QC-1859899-003	MRCA-21	Titanium	7440-32-6	E440	2790 mg/kg	108	70.0	130	----
QC-1859899-003	MRCA-21	Tungsten	7440-33-7	E440	6.99 mg/kg	110	70.0	130	----
QC-1859899-003	MRCA-21	Uranium	7440-61-1	E440	3.97 mg/kg	95.6	70.0	130	----
QC-1859899-003	MRCA-21	Vanadium	7440-62-2	E440	66.2 mg/kg	103	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: 1859899) - continued									
QC-1859899-003	MRCA-21	Zinc	7440-66-6	E440	828 mg/kg	100	70.0	130	----
QC-1859899-003	MRCA-21	Zirconium	7440-67-7	E440	6.91 mg/kg	100.0	70.0	130	----

Qualifiers

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).

Report To			Report Format / Distribution			Service Requested (Rush for routine analysis subject to availability)																											
Company: Covanta Energy			☐ Standard ☐ Other			☒ Regular (Standard Turnaround Times - Business Days)																											
Contact: Nicole Victor / Dan Skrypnik			☒ PDF ☐ Excel ☐ Digital ☐ Fax			☐ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT																											
Address: 5150 Riverbend Drive			Email 1: nvictor@covanta.com			☐ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT																											
Burnaby BC			Email 2: rminchin@covanta.com			☐ Same Day or Weekend Emergency - Contact ALS to Confirm TAT																											
Phone: 604-521-1025			Email 3: dskrypnik@covanta.com			Analysis Request																											
Fax: ☐ Yes ☐ No			brent.kirkpatrick@metrovancoouver.org																														
			Sarah.Wellman@metrovancoouver.org																														
Invoice To Same as Report ?			Client / Project Information			Please indicate below Filtered, Preserved or both (F, P, F/P)																											
Hardcopy of Invoice with Report? ☐ Yes ☐ No			Job #:																														
Company:			PO / AFE: PO#																														
Contact:			LSD: (includes 2:1 pH)																														
Address:																																	
Phone:			Quote #:																														
Fax:																																	
Lab Work Order # (lab use only)			ALS Contact:			Sampler:																											
2023																																	
Sample #			Sample Identification			Date (dd-mm-yy)			Time (hh:mm)			Sample Type			MET-TCLP-VA (all metals, Hg)			MOISTURE			Chromium 6			MET-CSR+FULL-VA (all metals)			Number of Containers						
			(This description will appear on the report)																														
BA2504-A-1						22-Jan-25			9:00			Soil			X X			X						1									
BA2504-A-2						22-Jan-25			9:00			Soil			X X			X						1									
BA2504-A-3						22-Jan-25			9:00			Soil			X X			X						1									
BA2504-A-4						22-Jan-25			9:00			Soil			X X			X						1									
BA2504-A-5						22-Jan-25			9:00			Soil			X X			X						1									
BA2504-A-6						22-Jan-25			9:00			Soil			X X			X						1									
BA2504-A-7						22-Jan-25			9:00			Soil			X X			X						1									
BA2504-A-8						22-Jan-25			9:00			Soil			X X			X						1									
BA2504-A-9						22-Jan-25			9:00			Soil			X X			X						1									
BA2504-A-10						22-Jan-25			9:00			Soil			X X			X						1									
BA2504-A-11						22-Jan-25			9:00			Soil			X X			X						1									
BA2504-A-12						22-Jan-25			9:00			Soil			X X			X						1									
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-mm-yy)		Time (hh-mm)			Received by:		Date:		Time:			Temperature:		Verified by:		Date:		Time:			Observations:										
[Signature]		29-Jan-25		0800			MT		Jan 29		12:30			13.3 °C									Yes / No ? If Yes add SIF										
GENF 20.00 Front																																	

CERTIFICATE OF ANALYSIS

Work Order	: VA25A2017		
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	: ----	Date Samples Received	: 29-Jan-2025 13:30
PO	: VANCO0000052919	Date Analysis Commenced	: 31-Jan-2025
C-O-C number	: ----	Issue Date	: 03-Feb-2025 19:45
Sampler	: ----		
Site	: includes 2:1 pH		
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
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	BA2504-A-1- Unprocessed	BA2504-A-2- Unprocessed	BA2504-A-3- Unprocessed	BA2504-A-4- Unprocessed	BA2504-A-5- Unprocessed
Client sampling date / time					19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25A2017-001	VA25A2017-002	VA25A2017-003	VA25A2017-004	VA25A2017-005	
					Result	Result	Result	Result	Result	
Physical Tests										
Moisture	----	E144/VA	0.25	%	28.8	27.6	29.7	26.0	27.5	
pH (1:2 soil:water)	----	E108/VA	0.10	pH units	11.7	11.6	11.8	11.6	11.9	
Metals										
Aluminum	7429-90-5	E440/VA	50	mg/kg	44400	56600	47900	51400	49500	
Antimony	7440-36-0	E440/VA	0.10	mg/kg	193	138	142	142	156	
Arsenic	7440-38-2	E440/VA	0.10	mg/kg	16.5	18.5	14.5	16.1	15.7	
Barium	7440-39-3	E440/VA	0.50	mg/kg	514	492	525	523	567	
Beryllium	7440-41-7	E440/VA	0.10	mg/kg	0.45	0.36	0.70	0.37	0.37	
Bismuth	7440-69-9	E440/VA	0.20	mg/kg	10.8	16.4	20.8	11.2	13.3	
Boron	7440-42-8	E440/VA	5.0	mg/kg	156	154	246	200	196	
Cadmium	7440-43-9	E440/VA	0.020	mg/kg	22.4	9.17	8.15	10.2	9.90	
Calcium	7440-70-2	E440/VA	50	mg/kg	154000	156000	147000	163000	158000	
Chromium	7440-47-3	E440/VA	0.50	mg/kg	170	164	137	262	189	
Cobalt	7440-48-4	E440/VA	0.10	mg/kg	99.8	31.6	116	231	467	
Copper	7440-50-8	E440/VA	0.50	mg/kg	6720	2440	22900	2640	2650	
Iron	7439-89-6	E440/VA	50	mg/kg	40000	50500	87600	57400	57400	
Lead	7439-92-1	E440/VA	0.50	mg/kg	388	506	383	296	288	
Lithium	7439-93-2	E440/VA	2.0	mg/kg	30.8	28.2	36.0	49.5	59.0	
Magnesium	7439-95-4	E440/VA	20	mg/kg	14400	13600	12400	13500	13700	
Manganese	7439-96-5	E440/VA	1.0	mg/kg	746	2390	858	827	836	
Mercury	7439-97-6	E510/VA	0.0500	mg/kg	<0.0500	<0.0500	0.0583	<0.0500	<0.0500	



Analytical Results

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

					Client sample ID	BA2504-A-1- Unprocessed	BA2504-A-2- Unprocessed	BA2504-A-3- Unprocessed	BA2504-A-4- Unprocessed	BA2504-A-5- Unprocessed
					Client sampling date / time	19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00
Analyte	CAS Number	Method/Lab	LOR	Unit		VA25A2017-001	VA25A2017-002	VA25A2017-003	VA25A2017-004	VA25A2017-005
						Result	Result	Result	Result	Result
Metals										
Molybdenum	7439-98-7	E440/VA	0.10	mg/kg		20.6	18.8	17.5	19.6	18.9
Nickel	7440-02-0	E440/VA	0.50	mg/kg		180	115	146	164	385
Phosphorus	7723-14-0	E440/VA	50	mg/kg		11000	11100	13500	13700	12100
Potassium	7440-09-7	E440/VA	100	mg/kg		8100	7080	6740	7500	8320
Selenium	7782-49-2	E440/VA	0.20	mg/kg		0.47	0.38	0.49	0.42	0.47
Silver	7440-22-4	E440/VA	0.10	mg/kg		5.64	5.61	5.66	5.18	9.05
Sodium	7440-23-5	E440/VA	50	mg/kg		23400	21200	21100	22700	24800
Strontium	7440-24-6	E440/VA	0.50	mg/kg		312	312	282	315	323
Sulfur	7704-34-9	E440/VA	1000	mg/kg		15000	13700	14000	14600	15100
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		163	145	125	331	170
Titanium	7440-32-6	E440/VA	1.0	mg/kg		334	527	434	326	392
Tungsten	7440-33-7	E440/VA	0.50	mg/kg		3.13	4.36	4.25	3.52	5.31
Uranium	7440-61-1	E440/VA	0.050	mg/kg		1.53	1.50	1.38	1.50	1.52
Vanadium	7440-62-2	E440/VA	0.20	mg/kg		27.3	31.5	27.8	31.5	28.9
Zinc	7440-66-6	E440/VA	2.0	mg/kg		4240	4240	3950	3710	4260
Zirconium	7440-67-7	E440/VA	1.0	mg/kg		4.4	5.6	4.5	4.0	4.5
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444/VA	0.010	pH units		12.0	12.0	12.0	11.9	12.0
pH, TCLP 2nd preliminary	----	EPP444/VA	0.010	pH units		5.81	7.50	8.17	6.17	6.43
pH, TCLP extraction fluid initial	----	EPP444/VA	0.010	pH units		2.91	2.91	2.91	2.91	2.91



Analytical Results

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

					Client sample ID	BA2504-A-1- Unprocessed	BA2504-A-2- Unprocessed	BA2504-A-3- Unprocessed	BA2504-A-4- Unprocessed	BA2504-A-5- Unprocessed
					Client sampling date / time	19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00
Analyte	CAS Number	Method/Lab	LOR	Unit		VA25A2017-001	VA25A2017-002	VA25A2017-003	VA25A2017-004	VA25A2017-005
						Result	Result	Result	Result	Result
TCLP Metals										
pH, TCLP final	----	EPP444/VA	0.010	pH units		7.81	7.25	7.78	7.10	7.46
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		1.85	1.90	1.88	1.93	1.85
Cadmium, TCLP	7440-43-9	E444/VA	0.050	mg/L		<0.050	<0.050	<0.050	0.076	<0.050
Calcium, TCLP	7440-70-2	E444/VA	10	mg/L		2120	2130	2130	2160	2160
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		0.330	0.758	0.249	0.955	0.274
Copper, TCLP	7440-50-8	E444/VA	0.050	mg/L		1.35	0.908	1.26	1.34	1.13
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		137	141	135	143	137
Mercury, TCLP	7439-97-6	E512/VA	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Nickel, TCLP	7440-02-0	E444/VA	0.25	mg/L		<0.25	0.31	<0.25	0.31	<0.25
Selenium, TCLP	7782-49-2	E444/VA	0.10	mg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Silver, TCLP	7440-22-4	E444/VA	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Thallium, TCLP	7440-28-0	E444/VA	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Uranium, TCLP	7440-61-1	E444/VA	0.20	mg/L		<0.20	<0.20	<0.20	<0.20	<0.20
Vanadium, TCLP	7440-62-2	E444/VA	0.15	mg/L		<0.15	<0.15	<0.15	<0.15	<0.15



Analytical Results

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

					Client sample ID	BA2504-A-1- Unprocessed	BA2504-A-2- Unprocessed	BA2504-A-3- Unprocessed	BA2504-A-4- Unprocessed	BA2504-A-5- Unprocessed
					Client sampling date / time	19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00
Analyte	CAS Number	Method/Lab	LOR	Unit		VA25A2017-001	VA25A2017-002	VA25A2017-003	VA25A2017-004	VA25A2017-005
						Result	Result	Result	Result	Result
TCLP Metals										
Zinc, TCLP	7440-66-6	E444/VA	0.50	mg/L		<0.50	2.54	<0.50	6.42	1.94
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	BA2504-A-6- Unprocessed	BA2504-A-7- Unprocessed	BA2504-A-8- Unprocessed	BA2504-A-9- Unprocessed	BA2504-A-10- Unprocessed
					Client sampling date / time	19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00
Analyte	CAS Number	Method/Lab	LOR	Unit		VA25A2017-006	VA25A2017-007	VA25A2017-008	VA25A2017-009	VA25A2017-010
						Result	Result	Result	Result	Result
Physical Tests										
Moisture	----	E144/VA	0.25	%		26.8	25.9	28.4	26.9	27.5
pH (1:2 soil:water)	----	E108/VA	0.10	pH units		11.8	11.9	11.8	11.7	11.7
Metals										
Aluminum	7429-90-5	E440/VA	50	mg/kg		51500	54300	57000	46000	50900
Antimony	7440-36-0	E440/VA	0.10	mg/kg		134	121	139	150	192
Arsenic	7440-38-2	E440/VA	0.10	mg/kg		19.9	13.6	20.4	16.6	16.6
Barium	7440-39-3	E440/VA	0.50	mg/kg		557	534	583	565	505
Beryllium	7440-41-7	E440/VA	0.10	mg/kg		0.37	0.34	0.36	0.33	0.34
Bismuth	7440-69-9	E440/VA	0.20	mg/kg		8.57	10.2	9.10	8.48	11.6
Boron	7440-42-8	E440/VA	5.0	mg/kg		249	148	166	191	184
Cadmium	7440-43-9	E440/VA	0.020	mg/kg		7.25	12.9	10.7	8.50	8.53
Calcium	7440-70-2	E440/VA	50	mg/kg		145000	140000	147000	151000	154000



Analytical Results

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

					Client sample ID	BA2504-A-6- Unprocessed	BA2504-A-7- Unprocessed	BA2504-A-8- Unprocessed	BA2504-A-9- Unprocessed	BA2504-A-10- Unprocessed
					Client sampling date / time	19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00
Analyte	CAS Number	Method/Lab	LOR	Unit		VA25A2017-006	VA25A2017-007	VA25A2017-008	VA25A2017-009	VA25A2017-010
						Result	Result	Result	Result	Result
Metals										
Chromium	7440-47-3	E440/VA	0.50	mg/kg		275	217	160	163	211
Cobalt	7440-48-4	E440/VA	0.10	mg/kg		700	108	110	34.5	74.6
Copper	7440-50-8	E440/VA	0.50	mg/kg		3110	2340	25000	6700	1830
Iron	7439-89-6	E440/VA	50	mg/kg		54800	51900	44000	56900	45300
Lead	7439-92-1	E440/VA	0.50	mg/kg		364	278	259	416	1660
Lithium	7439-93-2	E440/VA	2.0	mg/kg		43.3	26.9	29.7	31.3	31.6
Magnesium	7439-95-4	E440/VA	20	mg/kg		12400	14000	13600	12900	13400
Manganese	7439-96-5	E440/VA	1.0	mg/kg		910	989	778	829	760
Mercury	7439-97-6	E510/VA	0.0500	mg/kg		<0.0500	<0.0500	<0.0500	<0.0500	0.0636
Molybdenum	7439-98-7	E440/VA	0.10	mg/kg		17.6	15.2	17.5	15.2	19.5
Nickel	7440-02-0	E440/VA	0.50	mg/kg		384	150	309	203	242
Phosphorus	7723-14-0	E440/VA	50	mg/kg		12400	10400	12300	13800	13000
Potassium	7440-09-7	E440/VA	100	mg/kg		6530	6810	7580	6720	6980
Selenium	7782-49-2	E440/VA	0.20	mg/kg		0.44	0.52	0.42	0.41	0.37
Silver	7440-22-4	E440/VA	0.10	mg/kg		7.58	7.79	5.28	21.2	9.02
Sodium	7440-23-5	E440/VA	50	mg/kg		20800	21500	24200	20000	22300
Strontium	7440-24-6	E440/VA	0.50	mg/kg		291	282	290	277	338
Sulfur	7704-34-9	E440/VA	1000	mg/kg		12800	12600	13900	13400	13800
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		481	230	118	632	154
Titanium	7440-32-6	E440/VA	1.0	mg/kg		364	402	478	350	386



Analytical Results

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

					Client sample ID	BA2504-A-6- Unprocessed	BA2504-A-7- Unprocessed	BA2504-A-8- Unprocessed	BA2504-A-9- Unprocessed	BA2504-A-10- Unprocessed
					Client sampling date / time	19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00
Analyte	CAS Number	Method/Lab	LOR	Unit		VA25A2017-006	VA25A2017-007	VA25A2017-008	VA25A2017-009	VA25A2017-010
						Result	Result	Result	Result	Result
Metals										
Tungsten	7440-33-7	E440/VA	0.50	mg/kg		4.07	3.85	4.93	3.99	4.24
Uranium	7440-61-1	E440/VA	0.050	mg/kg		1.37	1.36	1.40	1.38	1.54
Vanadium	7440-62-2	E440/VA	0.20	mg/kg		28.3	32.7	30.4	28.8	29.0
Zinc	7440-66-6	E440/VA	2.0	mg/kg		3590	3300	5150	3930	6560
Zirconium	7440-67-7	E440/VA	1.0	mg/kg		7.7	3.7	4.4	4.0	4.2
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		6.03	6.92	6.97	7.21	6.82
pH, TCLP extraction fluid initial	----	EPP444/VA	0.010	pH units		2.91	2.91	2.91	2.91	2.91
pH, TCLP final	----	EPP444/VA	0.010	pH units		7.25	7.64	7.56	7.78	7.89
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		1.80	1.80	1.85	1.84	1.78
Cadmium, TCLP	7440-43-9	E444/VA	0.050	mg/L		0.071	<0.050	<0.050	<0.050	<0.050
Calcium, TCLP	7440-70-2	E444/VA	10	mg/L		2050	2120	2120	2160	2110
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		0.662	0.312	0.426	0.260	0.264
Copper, TCLP	7440-50-8	E444/VA	0.050	mg/L		1.28	1.35	1.21	1.40	1.34
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	BA2504-A-6- Unprocessed	BA2504-A-7- Unprocessed	BA2504-A-8- Unprocessed	BA2504-A-9- Unprocessed	BA2504-A-10- Unprocessed
					Client sampling date / time	19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00	19-Jan-2025 09:00
Analyte	CAS Number	Method/Lab	LOR	Unit		VA25A2017-006	VA25A2017-007	VA25A2017-008	VA25A2017-009	VA25A2017-010
						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		145	135	130	144	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		<0.25	<0.25	<0.25	<0.25	<0.25
Selenium, TCLP	7782-49-2	E444/VA	0.10	mg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Silver, TCLP	7440-22-4	E444/VA	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Thallium, TCLP	7440-28-0	E444/VA	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Uranium, TCLP	7440-61-1	E444/VA	0.20	mg/L		<0.20	<0.20	<0.20	<0.20	<0.20
Vanadium, TCLP	7440-62-2	E444/VA	0.15	mg/L		<0.15	<0.15	<0.15	<0.15	<0.15
Zinc, TCLP	7440-66-6	E444/VA	0.50	mg/L		2.86	<0.50	0.85	<0.50	<0.50
Zirconium, TCLP	7440-67-7	E444/VA	10	mg/L		<10	<10	<10	<10	<10

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

Analytical Results

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

					Client sample ID	BA2504-A-11- Unprocessed	BA2504-A-12- Unprocessed	----	----	----
					Client sampling date / time	19-Jan-2025 09:00	19-Jan-2025 09:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		VA25A2017-011	VA25A2017-012	----	----	----
						Result	Result	----	----	----
Physical Tests										
Moisture	----	E144/VA	0.25	%		26.9	27.3	----	----	----
pH (1:2 soil:water)	----	E108/VA	0.10	pH units		11.7	11.8	----	----	----



Analytical Results

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

					Client sample ID	BA2504-A-11- Unprocessed	BA2504-A-12- Unprocessed	----	----	----
					Client sampling date / time	19-Jan-2025 09:00	19-Jan-2025 09:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25A2017-011	VA25A2017-012	----	----	----	----
					Result	Result	----	----	----	----
Metals										
Aluminum	7429-90-5	E440/VA	50	mg/kg	53200	47000	----	----	----	----
Antimony	7440-36-0	E440/VA	0.10	mg/kg	158	143	----	----	----	----
Arsenic	7440-38-2	E440/VA	0.10	mg/kg	22.8	14.7	----	----	----	----
Barium	7440-39-3	E440/VA	0.50	mg/kg	534	510	----	----	----	----
Beryllium	7440-41-7	E440/VA	0.10	mg/kg	0.39	0.36	----	----	----	----
Bismuth	7440-69-9	E440/VA	0.20	mg/kg	9.89	9.45	----	----	----	----
Boron	7440-42-8	E440/VA	5.0	mg/kg	185	174	----	----	----	----
Cadmium	7440-43-9	E440/VA	0.020	mg/kg	8.71	8.75	----	----	----	----
Calcium	7440-70-2	E440/VA	50	mg/kg	153000	148000	----	----	----	----
Chromium	7440-47-3	E440/VA	0.50	mg/kg	200	172	----	----	----	----
Cobalt	7440-48-4	E440/VA	0.10	mg/kg	108	180	----	----	----	----
Copper	7440-50-8	E440/VA	0.50	mg/kg	9070	7830	----	----	----	----
Iron	7439-89-6	E440/VA	50	mg/kg	68900	63100	----	----	----	----
Lead	7439-92-1	E440/VA	0.50	mg/kg	278	260	----	----	----	----
Lithium	7439-93-2	E440/VA	2.0	mg/kg	53.2	28.2	----	----	----	----
Magnesium	7439-95-4	E440/VA	20	mg/kg	13500	13200	----	----	----	----
Manganese	7439-96-5	E440/VA	1.0	mg/kg	910	832	----	----	----	----
Mercury	7439-97-6	E510/VA	0.0500	mg/kg	<0.0500	<0.0500	----	----	----	----
Molybdenum	7439-98-7	E440/VA	0.10	mg/kg	20.1	17.1	----	----	----	----
Nickel	7440-02-0	E440/VA	0.50	mg/kg	218	208	----	----	----	----
Phosphorus	7723-14-0	E440/VA	50	mg/kg	11400	12400	----	----	----	----



Analytical Results

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

					Client sample ID	BA2504-A-11- Unprocessed	BA2504-A-12- Unprocessed	----	----	----
					Client sampling date / time	19-Jan-2025 09:00	19-Jan-2025 09:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25A2017-011	VA25A2017-012	----	----	----	----
					Result	Result	----	----	----	----
Metals										
Potassium	7440-09-7	E440/VA	100	mg/kg	6950	7450	----	----	----	----
Selenium	7782-49-2	E440/VA	0.20	mg/kg	0.44	0.51	----	----	----	----
Silver	7440-22-4	E440/VA	0.10	mg/kg	6.83	9.42	----	----	----	----
Sodium	7440-23-5	E440/VA	50	mg/kg	21300	24900	----	----	----	----
Strontium	7440-24-6	E440/VA	0.50	mg/kg	294	326	----	----	----	----
Sulfur	7704-34-9	E440/VA	1000	mg/kg	14400	14900	----	----	----	----
Thallium	7440-28-0	E440/VA	0.050	mg/kg	<0.050	<0.050	----	----	----	----
Tin	7440-31-5	E440/VA	2.0	mg/kg	150	150	----	----	----	----
Titanium	7440-32-6	E440/VA	1.0	mg/kg	595	539	----	----	----	----
Tungsten	7440-33-7	E440/VA	0.50	mg/kg	4.82	6.05	----	----	----	----
Uranium	7440-61-1	E440/VA	0.050	mg/kg	1.50	1.51	----	----	----	----
Vanadium	7440-62-2	E440/VA	0.20	mg/kg	31.2	29.8	----	----	----	----
Zinc	7440-66-6	E440/VA	2.0	mg/kg	4110	4760	----	----	----	----
Zirconium	7440-67-7	E440/VA	1.0	mg/kg	4.1	3.8	----	----	----	----
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	6.45	7.03	----	----	----	----
pH, TCLP extraction fluid initial	----	EPP444/VA	0.010	pH units	2.91	2.91	----	----	----	----
pH, TCLP final	----	EPP444/VA	0.010	pH units	7.24	7.68	----	----	----	----
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	BA2504-A-11- Unprocessed	BA2504-A-12- Unprocessed	----	----	----
					Client sampling date / time	19-Jan-2025 09:00	19-Jan-2025 09:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA25A2017-011	VA25A2017-012	----	----	----	----
					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	1.84	1.86	----	----	----	----
Cadmium, TCLP	7440-43-9	E444/VA	0.050	mg/L	0.068	<0.050	----	----	----	----
Calcium, TCLP	7440-70-2	E444/VA	10	mg/L	2070	2140	----	----	----	----
Chromium, TCLP	7440-47-3	E444/VA	0.25	mg/L	<0.25	<0.25	----	----	----	----
Cobalt, TCLP	7440-48-4	E444/VA	0.050	mg/L	0.417	0.314	----	----	----	----
Copper, TCLP	7440-50-8	E444/VA	0.050	mg/L	1.42	1.21	----	----	----	----
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	134	134	----	----	----	----
Mercury, TCLP	7439-97-6	E512/VA	0.0010	mg/L	<0.0010	<0.0010	----	----	----	----
Nickel, TCLP	7440-02-0	E444/VA	0.25	mg/L	<0.25	<0.25	----	----	----	----
Selenium, TCLP	7782-49-2	E444/VA	0.10	mg/L	<0.10	<0.10	----	----	----	----
Silver, TCLP	7440-22-4	E444/VA	0.050	mg/L	<0.050	<0.050	----	----	----	----
Thallium, TCLP	7440-28-0	E444/VA	1.0	mg/L	<1.0	<1.0	----	----	----	----
Uranium, TCLP	7440-61-1	E444/VA	0.20	mg/L	<0.20	<0.20	----	----	----	----
Vanadium, TCLP	7440-62-2	E444/VA	0.15	mg/L	<0.15	<0.15	----	----	----	----
Zinc, TCLP	7440-66-6	E444/VA	0.50	mg/L	3.23	<0.50	----	----	----	----
Zirconium, TCLP	7440-67-7	E444/VA	10	mg/L	<10	<10	----	----	----	----

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA25A2017	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	: ----	Date Samples Received	: 29-Jan-2025 13:30
PO	: VANCO0000052919	Issue Date	: 03-Feb-2025 19:44
C-O-C number	: ----		
Sampler	: ----		
Site	: includes 2:1 pH		
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	Anonymous	Anonymous	Strontium	7440-24-6	E440	64.9 % 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			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2504-A-10-Unprocessed	E510	19-Jan-2025	31-Jan-2025	28 days	12 days	✓	03-Feb-2025	28 days	3 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2504-A-11-Unprocessed	E510	19-Jan-2025	31-Jan-2025	28 days	12 days	✓	03-Feb-2025	28 days	3 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2504-A-12-Unprocessed	E510	19-Jan-2025	31-Jan-2025	28 days	12 days	✓	03-Feb-2025	28 days	3 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2504-A-1-Unprocessed	E510	19-Jan-2025	31-Jan-2025	28 days	12 days	✓	03-Feb-2025	28 days	3 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2504-A-2-Unprocessed	E510	19-Jan-2025	31-Jan-2025	28 days	12 days	✓	03-Feb-2025	28 days	3 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2504-A-3-Unprocessed	E510	19-Jan-2025	31-Jan-2025	28 days	12 days	✓	03-Feb-2025	28 days	3 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2504-A-4-Unprocessed	E510	19-Jan-2025	31-Jan-2025	28 days	12 days	✓	03-Feb-2025	28 days	3 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 BA2504-A-5-Unprocessed	E510	19-Jan-2025	31-Jan-2025	28 days	12 days	✓	03-Feb-2025	28 days	3 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2504-A-6-Unprocessed	E510	19-Jan-2025	31-Jan-2025	28 days	12 days	✓	03-Feb-2025	28 days	3 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2504-A-7-Unprocessed	E510	19-Jan-2025	31-Jan-2025	28 days	12 days	✓	03-Feb-2025	28 days	3 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2504-A-8-Unprocessed	E510	19-Jan-2025	31-Jan-2025	28 days	12 days	✓	03-Feb-2025	28 days	3 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag BA2504-A-9-Unprocessed	E510	19-Jan-2025	31-Jan-2025	28 days	12 days	✓	03-Feb-2025	28 days	3 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2504-A-10-Unprocessed	E440	19-Jan-2025	31-Jan-2025	180 days	12 days	✓	03-Feb-2025	180 days	15 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2504-A-11-Unprocessed	E440	19-Jan-2025	31-Jan-2025	180 days	12 days	✓	03-Feb-2025	180 days	15 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2504-A-12-Unprocessed	E440	19-Jan-2025	31-Jan-2025	180 days	12 days	✓	03-Feb-2025	180 days	15 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2504-A-1-Unprocessed	E440	19-Jan-2025	31-Jan-2025	180 days	12 days	✓	03-Feb-2025	180 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	
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2504-A-2-Unprocessed	E440	19-Jan-2025	31-Jan-2025	180 days	12 days	✓	03-Feb-2025	180 days	15 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2504-A-3-Unprocessed	E440	19-Jan-2025	31-Jan-2025	180 days	12 days	✓	03-Feb-2025	180 days	15 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2504-A-4-Unprocessed	E440	19-Jan-2025	31-Jan-2025	180 days	12 days	✓	03-Feb-2025	180 days	15 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2504-A-5-Unprocessed	E440	19-Jan-2025	31-Jan-2025	180 days	12 days	✓	03-Feb-2025	180 days	15 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2504-A-6-Unprocessed	E440	19-Jan-2025	31-Jan-2025	180 days	12 days	✓	03-Feb-2025	180 days	15 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2504-A-7-Unprocessed	E440	19-Jan-2025	31-Jan-2025	180 days	12 days	✓	03-Feb-2025	180 days	15 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2504-A-8-Unprocessed	E440	19-Jan-2025	31-Jan-2025	180 days	12 days	✓	03-Feb-2025	180 days	15 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag BA2504-A-9-Unprocessed	E440	19-Jan-2025	31-Jan-2025	180 days	12 days	✓	03-Feb-2025	180 days	15 days	✓
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2504-A-10-Unprocessed	E144	19-Jan-2025	---	---	---		31-Jan-2025	---	12 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 BA2504-A-11-Unprocessed	E144	19-Jan-2025	----	----	----		31-Jan-2025	----	12 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2504-A-12-Unprocessed	E144	19-Jan-2025	----	----	----		31-Jan-2025	----	12 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2504-A-1-Unprocessed	E144	19-Jan-2025	----	----	----		31-Jan-2025	----	12 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2504-A-2-Unprocessed	E144	19-Jan-2025	----	----	----		31-Jan-2025	----	12 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2504-A-3-Unprocessed	E144	19-Jan-2025	----	----	----		31-Jan-2025	----	12 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2504-A-4-Unprocessed	E144	19-Jan-2025	----	----	----		31-Jan-2025	----	12 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2504-A-5-Unprocessed	E144	19-Jan-2025	----	----	----		31-Jan-2025	----	12 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2504-A-6-Unprocessed	E144	19-Jan-2025	----	----	----		31-Jan-2025	----	12 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2504-A-7-Unprocessed	E144	19-Jan-2025	----	----	----		31-Jan-2025	----	12 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 BA2504-A-8-Unprocessed	E144	19-Jan-2025	----	----	----		31-Jan-2025	----	12 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2504-A-9-Unprocessed	E144	19-Jan-2025	----	----	----		31-Jan-2025	----	12 days	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2504-A-10-Unprocessed	E108	19-Jan-2025	31-Jan-2025	30 days	12 days	✓	01-Feb-2025	30 days	13 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2504-A-11-Unprocessed	E108	19-Jan-2025	31-Jan-2025	30 days	12 days	✓	01-Feb-2025	30 days	13 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2504-A-12-Unprocessed	E108	19-Jan-2025	31-Jan-2025	30 days	12 days	✓	01-Feb-2025	30 days	13 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2504-A-1-Unprocessed	E108	19-Jan-2025	31-Jan-2025	30 days	12 days	✓	01-Feb-2025	30 days	13 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2504-A-2-Unprocessed	E108	19-Jan-2025	31-Jan-2025	30 days	12 days	✓	01-Feb-2025	30 days	13 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2504-A-3-Unprocessed	E108	19-Jan-2025	31-Jan-2025	30 days	12 days	✓	01-Feb-2025	30 days	13 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2504-A-4-Unprocessed	E108	19-Jan-2025	31-Jan-2025	30 days	12 days	✓	01-Feb-2025	30 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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2504-A-5-Unprocessed	E108	19-Jan-2025	31-Jan-2025	30 days	12 days	✓	01-Feb-2025	30 days	13 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2504-A-6-Unprocessed	E108	19-Jan-2025	31-Jan-2025	30 days	12 days	✓	01-Feb-2025	30 days	13 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2504-A-7-Unprocessed	E108	19-Jan-2025	31-Jan-2025	30 days	12 days	✓	01-Feb-2025	30 days	13 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2504-A-8-Unprocessed	E108	19-Jan-2025	31-Jan-2025	30 days	12 days	✓	01-Feb-2025	30 days	13 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag BA2504-A-9-Unprocessed	E108	19-Jan-2025	31-Jan-2025	30 days	12 days	✓	01-Feb-2025	30 days	13 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2504-A-10-Unprocessed	E512	31-Jan-2025	02-Feb-2025	40 days	14 days	✓	02-Feb-2025	40 days	14 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2504-A-11-Unprocessed	E512	31-Jan-2025	02-Feb-2025	40 days	14 days	✓	02-Feb-2025	40 days	14 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2504-A-12-Unprocessed	E512	31-Jan-2025	02-Feb-2025	40 days	14 days	✓	02-Feb-2025	40 days	14 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2504-A-1-Unprocessed	E512	31-Jan-2025	02-Feb-2025	40 days	14 days	✓	02-Feb-2025	40 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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2504-A-2-Unprocessed	E512	31-Jan-2025	02-Feb-2025	40 days	14 days	✓	02-Feb-2025	40 days	14 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2504-A-3-Unprocessed	E512	31-Jan-2025	02-Feb-2025	40 days	14 days	✓	02-Feb-2025	40 days	14 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2504-A-4-Unprocessed	E512	31-Jan-2025	02-Feb-2025	40 days	14 days	✓	02-Feb-2025	40 days	14 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2504-A-5-Unprocessed	E512	31-Jan-2025	02-Feb-2025	40 days	14 days	✓	02-Feb-2025	40 days	14 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2504-A-6-Unprocessed	E512	31-Jan-2025	02-Feb-2025	40 days	14 days	✓	02-Feb-2025	40 days	14 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2504-A-7-Unprocessed	E512	31-Jan-2025	02-Feb-2025	40 days	14 days	✓	02-Feb-2025	40 days	14 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2504-A-8-Unprocessed	E512	31-Jan-2025	02-Feb-2025	40 days	14 days	✓	02-Feb-2025	40 days	14 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved) BA2504-A-9-Unprocessed	E512	31-Jan-2025	02-Feb-2025	40 days	14 days	✓	02-Feb-2025	40 days	14 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2504-A-10-Unprocessed	E444	31-Jan-2025	02-Feb-2025	192 days	14 days	✓	03-Feb-2025	192 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 : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2504-A-11-Unprocessed	E444	31-Jan-2025	02-Feb-2025	192 days	14 days	✓	03-Feb-2025	192 days	15 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2504-A-12-Unprocessed	E444	31-Jan-2025	02-Feb-2025	192 days	14 days	✓	03-Feb-2025	192 days	15 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2504-A-1-Unprocessed	E444	31-Jan-2025	02-Feb-2025	192 days	14 days	✓	03-Feb-2025	192 days	15 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2504-A-2-Unprocessed	E444	31-Jan-2025	02-Feb-2025	192 days	14 days	✓	03-Feb-2025	192 days	15 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2504-A-3-Unprocessed	E444	31-Jan-2025	02-Feb-2025	192 days	14 days	✓	03-Feb-2025	192 days	15 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2504-A-4-Unprocessed	E444	31-Jan-2025	02-Feb-2025	192 days	14 days	✓	03-Feb-2025	192 days	15 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2504-A-5-Unprocessed	E444	31-Jan-2025	02-Feb-2025	192 days	14 days	✓	03-Feb-2025	192 days	15 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2504-A-6-Unprocessed	E444	31-Jan-2025	02-Feb-2025	192 days	14 days	✓	03-Feb-2025	192 days	15 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2504-A-7-Unprocessed	E444	31-Jan-2025	02-Feb-2025	192 days	14 days	✓	03-Feb-2025	192 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 : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2504-A-8-Unprocessed	E444	31-Jan-2025	02-Feb-2025	192 days	14 days	✓	03-Feb-2025	192 days	15 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2504-A-9-Unprocessed	E444	31-Jan-2025	02-Feb-2025	192 days	14 days	✓	03-Feb-2025	192 days	15 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI, PFAS) BA2504-A-10-Unprocessed	EPP444	19-Jan-2025	31-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) BA2504-A-11-Unprocessed	EPP444	19-Jan-2025	31-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) BA2504-A-12-Unprocessed	EPP444	19-Jan-2025	31-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) BA2504-A-1-Unprocessed	EPP444	19-Jan-2025	31-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) BA2504-A-2-Unprocessed	EPP444	19-Jan-2025	31-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) BA2504-A-3-Unprocessed	EPP444	19-Jan-2025	31-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) BA2504-A-4-Unprocessed	EPP444	19-Jan-2025	31-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) BA2504-A-5-Unprocessed	EPP444	19-Jan-2025	31-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) BA2504-A-6-Unprocessed	EPP444	19-Jan-2025	31-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) BA2504-A-7-Unprocessed	EPP444	19-Jan-2025	31-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) BA2504-A-8-Unprocessed	EPP444	19-Jan-2025	31-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) BA2504-A-9-Unprocessed	EPP444	19-Jan-2025	31-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	1860211	1	12	8.3	5.0	✔
Mercury in Soil/Solid by CVAAS	E510	1858348	1	12	8.3	5.0	✔
Metals by CRC ICPMS (TCLP)	E444	1860212	1	12	8.3	5.0	✔
Metals in Soil/Solid by CRC ICPMS	E440	1858347	1	14	7.1	5.0	✔
Moisture Content by Gravimetry	E144	1858352	1	18	5.5	5.0	✔
pH by Meter (1:2 Soil:Water Extraction)	E108	1858351	1	12	8.3	5.0	✔
Laboratory Control Samples (LCS)							
Mercury in Soil/Solid by CVAAS	E510	1858348	2	12	16.6	10.0	✔
Metals in Soil/Solid by CRC ICPMS	E440	1858347	2	14	14.2	10.0	✔
Moisture Content by Gravimetry	E144	1858352	1	18	5.5	5.0	✔
pH by Meter (1:2 Soil:Water Extraction)	E108	1858351	1	12	8.3	5.0	✔
Method Blanks (MB)							
Mercury by CVAAS (TCLP)	E512	1860211	1	12	8.3	5.0	✔
Mercury in Soil/Solid by CVAAS	E510	1858348	1	12	8.3	5.0	✔
Metals by CRC ICPMS (TCLP)	E444	1860212	1	12	8.3	5.0	✔
Metals in Soil/Solid by CRC ICPMS	E440	1858347	1	14	7.1	5.0	✔
Moisture Content by Gravimetry	E144	1858352	1	18	5.5	5.0	✔
Matrix Spikes (MS)							
Mercury by CVAAS (TCLP)	E512	1860211	1	12	8.3	5.0	✔
Metals by CRC ICPMS (TCLP)	E444	1860212	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.

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 Work Order : VA25A2017
 Client : Reworld Renewable Burnaby, ULC
 Project : ----



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Digestion for Metals and Mercury	EP440 ALS Environmental - Vancouver	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO 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	: VA25A2017	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	: ----	Date Samples Received	: 29-Jan-2025 13:30
PO	: VANCO0000052919	Date Analysis Commenced	: 31-Jan-2025
C-O-C number	: ----	Issue Date	: 03-Feb-2025 19:44
Sampler	: ----		
Site	: includes 2:1 pH		
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
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General Comments

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

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

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

Workorder Comments

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).

					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: 1858351)											
VA25A2017-001	BA2504-A-1-Unprocessed	pH (1:2 soil:water)	----	E108	0.10	pH units	11.7	11.8	1.0%	5%	----
Physical Tests (QC Lot: 1858352)											
KS2500270-001	Anonymous	Moisture	----	E144	0.25	%	21.0	23.0	8.82%	20%	----
Metals (QC Lot: 1858347)											
KS2500270-001	Anonymous	Aluminum	7429-90-5	E440	50	mg/kg	17900	19200	6.93%	40%	----
		Antimony	7440-36-0	E440	0.10	mg/kg	0.36	0.35	0.004	Diff <2x LOR	----
		Arsenic	7440-38-2	E440	0.10	mg/kg	3.44	3.53	2.54%	30%	----
		Barium	7440-39-3	E440	0.50	mg/kg	93.0	108	14.6%	40%	----
		Beryllium	7440-41-7	E440	0.10	mg/kg	0.44	0.48	0.03	Diff <2x LOR	----
		Bismuth	7440-69-9	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----
		Boron	7440-42-8	E440	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	----
		Cadmium	7440-43-9	E440	0.020	mg/kg	0.337	0.389	14.5%	30%	----
		Calcium	7440-70-2	E440	50	mg/kg	18900	17400	8.28%	30%	----
		Chromium	7440-47-3	E440	0.50	mg/kg	41.4	40.3	2.84%	30%	----
		Cobalt	7440-48-4	E440	0.10	mg/kg	17.4	18.7	7.35%	30%	----
		Copper	7440-50-8	E440	0.50	mg/kg	53.8	55.7	3.58%	30%	----
		Iron	7439-89-6	E440	50	mg/kg	31600	32600	3.01%	30%	----
		Lead	7439-92-1	E440	0.50	mg/kg	24.4	23.2	5.32%	40%	----
		Lithium	7439-93-2	E440	2.0	mg/kg	9.4	10.3	0.9	Diff <2x LOR	----
		Magnesium	7439-95-4	E440	20	mg/kg	12500	12500	0.445%	30%	----
		Manganese	7439-96-5	E440	1.0	mg/kg	508	524	3.11%	30%	----
		Molybdenum	7439-98-7	E440	0.10	mg/kg	0.96	1.06	10.6%	40%	----
		Nickel	7440-02-0	E440	0.50	mg/kg	46.8	49.0	4.49%	30%	----
		Phosphorus	7723-14-0	E440	50	mg/kg	1150	1280	11.4%	30%	----
		Potassium	7440-09-7	E440	100	mg/kg	1120	1300	14.6%	40%	----
		Selenium	7782-49-2	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----
		Silver	7440-22-4	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Sodium	7440-23-5	E440	50	mg/kg	3040	3540	15.3%	40%	----
		Strontium	7440-24-6	E440	0.50	mg/kg	187	95.5	64.9%	40%	DUP-H
		Sulfur	7704-34-9	E440	1000	mg/kg	<1000	<1000	0	Diff <2x LOR	----



Sub-Matrix: Soil/Solid					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Metals (QC Lot: 1858347) - continued											
KS2500270-001	Anonymous	Thallium	7440-28-0	E440	0.050	mg/kg	0.111	0.123	0.012	Diff <2x LOR	----
		Tin	7440-31-5	E440	2.0	mg/kg	<2.0	<2.0	0	Diff <2x LOR	----
		Titanium	7440-32-6	E440	1.0	mg/kg	1320	1280	2.95%	40%	----
		Tungsten	7440-33-7	E440	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		Uranium	7440-61-1	E440	0.050	mg/kg	0.589	0.633	7.31%	30%	----
		Vanadium	7440-62-2	E440	0.20	mg/kg	87.8	98.9	11.9%	30%	----
		Zinc	7440-66-6	E440	2.0	mg/kg	90.4	98.0	8.10%	30%	----
		Zirconium	7440-67-7	E440	1.0	mg/kg	8.1	8.9	9.89%	30%	----
Metals (QC Lot: 1858348)											
VA25A2017-001	BA2504-A-1-Unprocessed	Mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	0	Diff <2x LOR	----
TCLP Metals (QC Lot: 1860211)											
VA25A2017-001	BA2504-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: 1860212)											
VA25A2017-001	BA2504-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	1.85	1.82	0.02	Diff <2x LOR	----
		Cadmium, TCLP	7440-43-9	E444	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Calcium, TCLP	7440-70-2	E444	10	mg/L	2120	2050	3.45%	30%	----
		Chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	<0.25	0	Diff <2x LOR	----
		Cobalt, TCLP	7440-48-4	E444	0.050	mg/L	0.330	0.321	0.010	Diff <2x LOR	----
		Copper, TCLP	7440-50-8	E444	0.050	mg/L	1.35	1.28	5.37%	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	137	131	4.01%	30%	----
		Nickel, TCLP	7440-02-0	E444	0.25	mg/L	<0.25	<0.25	0	Diff <2x LOR	----
		Selenium, TCLP	7782-49-2	E444	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
		Silver, TCLP	7440-22-4	E444	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Thallium, TCLP	7440-28-0	E444	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Uranium, TCLP	7440-61-1	E444	0.20	mg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	<0.15	0	Diff <2x LOR	----
		Zinc, TCLP	7440-66-6	E444	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Zirconium, TCLP	7440-67-7	E444	10	mg/L	<10	<10	0	Diff <2x LOR	----



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: 1858352)						
Moisture	----	E144	0.25	%	<0.25	----
Metals (QCLot: 1858347)						
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	----
Titanium	7440-32-6	E440	1	mg/kg	<1.0	----
Tungsten	7440-33-7	E440	0.5	mg/kg	<0.50	----



Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 1858347) - continued						
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	----
Metals (QCLot: 1858348)						
Mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
TCLP Metals (QCLot: 1860211)						
Mercury, TCLP	7439-97-6	E512	0.001	mg/L	<0.0010	----
TCLP Metals (QCLot: 1860212)						
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: 1858351)									
pH (1:2 soil:water)	----	E108	----	pH units	6 pH units	101	95.0	105	----
Physical Tests (QCLot: 1858352)									
Moisture	----	E144	0.25	%	50 %	100.0	90.0	110	----
Metals (QCLot: 1858347)									
Aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	98.5	80.0	120	----
Antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	93.3	80.0	120	----
Arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	105	80.0	120	----
Barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	96.3	80.0	120	----
Beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	95.0	80.0	120	----
Bismuth	7440-69-9	E440	0.2	mg/kg	100 mg/kg	92.7	80.0	120	----
Boron	7440-42-8	E440	5	mg/kg	100 mg/kg	95.8	80.0	120	----
Cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	98.6	80.0	120	----
Calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	93.0	80.0	120	----
Chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	97.5	80.0	120	----
Cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	96.1	80.0	120	----
Copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	95.0	80.0	120	----
Iron	7439-89-6	E440	50	mg/kg	100 mg/kg	93.3	80.0	120	----
Lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	94.0	80.0	120	----
Lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	95.3	80.0	120	----
Magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	98.8	80.0	120	----
Manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	96.2	80.0	120	----
Molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	95.3	80.0	120	----
Nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	93.5	80.0	120	----
Phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	107	80.0	120	----
Potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	100	80.0	120	----
Selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	95.7	80.0	120	----
Silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	84.8	80.0	120	----
Sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	95.3	80.0	120	----
Strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	97.1	80.0	120	----
Sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	99.0	80.0	120	----
Thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	89.9	80.0	120	----
Tin	7440-31-5	E440	2	mg/kg	50 mg/kg	91.6	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: 1858347) - continued									
Titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	98.3	80.0	120	----
Tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	91.7	80.0	120	----
Uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	97.4	80.0	120	----
Vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	98.5	80.0	120	----
Zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	93.5	80.0	120	----
Zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	95.0	80.0	120	----
Metals (QCLot: 1858348)									
Mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	83.8	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: 1860211)										
VA25A2017-001	BA2504-A-1-Unprocessed	Mercury, TCLP	7439-97-6	E512	0.0009 mg/L	0.001 mg/L	90.6	50.0	140	----
TCLP Metals (QCLot: 1860212)										
VA25A2017-001	BA2504-A-1-Unprocessed	Antimony, TCLP	7440-36-0	E444	4.97 mg/L	5 mg/L	99.4	50.0	140	----
		Arsenic, TCLP	7440-38-2	E444	5.2 mg/L	5 mg/L	104	50.0	140	----
		Barium, TCLP	7440-39-3	E444	8.8 mg/L	12.5 mg/L	70.1	50.0	140	----
		Beryllium, TCLP	7440-41-7	E444	0.245 mg/L	0.25 mg/L	97.9	50.0	140	----
		Boron, TCLP	7440-42-8	E444	9.06 mg/L	10 mg/L	90.6	50.0	140	----
		Cadmium, TCLP	7440-43-9	E444	0.240 mg/L	0.25 mg/L	96.2	50.0	140	----
		Calcium, TCLP	7440-70-2	E444	ND mg/L	----	ND	50.0	140	----
		Chromium, TCLP	7440-47-3	E444	1.21 mg/L	1.25 mg/L	96.5	50.0	140	----
		Cobalt, TCLP	7440-48-4	E444	ND mg/L	----	ND	50.0	140	----
		Copper, TCLP	7440-50-8	E444	2.21 mg/L	2.5 mg/L	88.3	50.0	140	----
		Iron, TCLP	7439-89-6	E444	232 mg/L	250 mg/L	92.7	50.0	140	----
		Lead, TCLP	7439-92-1	E444	8.53 mg/L	10 mg/L	85.3	50.0	140	----
		Magnesium, TCLP	7439-95-4	E444	242 mg/L	250 mg/L	97.0	50.0	140	----
		Nickel, TCLP	7440-02-0	E444	2.38 mg/L	2.5 mg/L	95.0	50.0	140	----
		Selenium, TCLP	7782-49-2	E444	4.85 mg/L	5 mg/L	97.0	50.0	140	----
		Silver, TCLP	7440-22-4	E444	0.072 mg/L	0.1 mg/L	72.4	50.0	140	----
		Thallium, TCLP	7440-28-0	E444	4.6 mg/L	5 mg/L	91.9	50.0	140	----
		Uranium, TCLP	7440-61-1	E444	4.82 mg/L	5 mg/L	96.3	50.0	150	----
		Vanadium, TCLP	7440-62-2	E444	0.75 mg/L	0.75 mg/L	99.7	50.0	140	----
		Zinc, TCLP	7440-66-6	E444	9.45 mg/L	10 mg/L	94.5	50.0	140	----
		Zirconium, TCLP	7440-67-7	E444	0.8 mg/L	1 mg/L	82.3	50.0	150	----



Reference Material (RM) Report

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

Sub-Matrix:

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: 1858347)									
QC-1858347-003	MRCA-21	Aluminum	7429-90-5	E440	22500 mg/kg	110	70.0	130	----
QC-1858347-003	MRCA-21	Antimony	7440-36-0	E440	24.8 mg/kg	104	70.0	130	----
QC-1858347-003	MRCA-21	Arsenic	7440-38-2	E440	21.2 mg/kg	105	70.0	130	----
QC-1858347-003	MRCA-21	Barium	7440-39-3	E440	788 mg/kg	104	70.0	130	----
QC-1858347-003	MRCA-21	Beryllium	7440-41-7	E440	1.82 mg/kg	107	70.0	130	----
QC-1858347-003	MRCA-21	Bismuth	7440-69-9	E440	1.78 mg/kg	89.1	70.0	130	----
QC-1858347-003	MRCA-21	Cadmium	7440-43-9	E440	2.15 mg/kg	106	70.0	130	----
QC-1858347-003	MRCA-21	Calcium	7440-70-2	E440	4900 mg/kg	103	70.0	130	----
QC-1858347-003	MRCA-21	Chromium	7440-47-3	E440	56.9 mg/kg	106	70.0	130	----
QC-1858347-003	MRCA-21	Cobalt	7440-48-4	E440	32 mg/kg	104	70.0	130	----
QC-1858347-003	MRCA-21	Copper	7440-50-8	E440	969 mg/kg	105	70.0	130	----
QC-1858347-003	MRCA-21	Iron	7439-89-6	E440	32700 mg/kg	104	70.0	130	----
QC-1858347-003	MRCA-21	Lead	7439-92-1	E440	919 mg/kg	97.4	70.0	130	----
QC-1858347-003	MRCA-21	Lithium	7439-93-2	E440	47.3 mg/kg	112	70.0	130	----
QC-1858347-003	MRCA-21	Magnesium	7439-95-4	E440	7780 mg/kg	109	70.0	130	----
QC-1858347-003	MRCA-21	Manganese	7439-96-5	E440	8640 mg/kg	100	70.0	130	----
QC-1858347-003	MRCA-21	Molybdenum	7439-98-7	E440	25.1 mg/kg	102	70.0	130	----
QC-1858347-003	MRCA-21	Nickel	7440-02-0	E440	1000 mg/kg	102	70.0	130	----
QC-1858347-003	MRCA-21	Phosphorus	7723-14-0	E440	660 mg/kg	107	70.0	130	----
QC-1858347-003	MRCA-21	Potassium	7440-09-7	E440	10800 mg/kg	110	70.0	130	----
QC-1858347-003	MRCA-21	Selenium	7782-49-2	E440	1.04 mg/kg	97.3	60.0	140	----
QC-1858347-003	MRCA-21	Silver	7440-22-4	E440	8.98 mg/kg	98.9	70.0	130	----
QC-1858347-003	MRCA-21	Sodium	7440-23-5	E440	1770 mg/kg	107	70.0	130	----
QC-1858347-003	MRCA-21	Strontium	7440-24-6	E440	41 mg/kg	103	70.0	130	----
QC-1858347-003	MRCA-21	Sulfur	7704-34-9	E440	3940 mg/kg	108	50.0	150	----
QC-1858347-003	MRCA-21	Thallium	7440-28-0	E440	0.907 mg/kg	96.3	70.0	130	----
QC-1858347-003	MRCA-21	Tin	7440-31-5	E440	3.79 mg/kg	102	40.0	160	----
QC-1858347-003	MRCA-21	Titanium	7440-32-6	E440	2790 mg/kg	108	70.0	130	----
QC-1858347-003	MRCA-21	Tungsten	7440-33-7	E440	6.99 mg/kg	103	70.0	130	----
QC-1858347-003	MRCA-21	Uranium	7440-61-1	E440	3.97 mg/kg	94.0	70.0	130	----
QC-1858347-003	MRCA-21	Vanadium	7440-62-2	E440	66.2 mg/kg	104	70.0	130	----
QC-1858347-003	MRCA-21	Zinc	7440-66-6	E440	828 mg/kg	102	70.0	130	----
QC-1858347-003	MRCA-21	Zirconium	7440-67-7	E440	6.91 mg/kg	95.0	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: 1858348)									
QC-1858348-003	MRCA-21	Mercury	7439-97-6	E510	0.068 mg/kg	95.1	70.0	130	----



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Report To				Report Format / Distribution				Service Requested (Rush for routine)																							
Company: Covanta Energy				☐ Standard ☐ Other				☒ Regular (Standard Turnaround Times - Business Days)																							
Contact: Nicole Victor / Dan Skrypnik				☒ PDF ☐ Excel ☐ Digital ☐ Fax				☐ Priority (2-4 Business Days) - 50% Surcharge																							
Address: 5150 Riverbend Drive				Email 1: nvictor@covanta.com				☐ Emergency (1-2 Bus. Days) - 100% Surcharge																							
Burnaby BC				Email 2: rminchin@covanta.com				☐ Same Day or Weekend Emergency - Contact A																							
Phone: 604-521-1025				Email 3: dskrypnik@covanta.com				Analysis Requested																							
☐ Yes ☐ No				brent.kirkpatrick@metrovancover.org																											
				Sarah.Wellman@metrovancover.org																											
Invoice To Same as Report?				Client / Project Information				Please indicate below Filtered, Preserved or both (F, P, F/P)																							
Hardcopy of Invoice with Report? ☐ Yes ☐ No				Job #:																											
Company:				PO / AFE: PO#																											
Contact:				LSD: (includes 2:1 pH)																											
Address:				Quote #:																											
Phone:																															
Fax:																															
Lab/Work Order # (lab use only)				ALS Contact:				Sampler:																							
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		Chromium 6		MET-CSR+FULL-VA (all metals)										Number of Containers					
		BA2504-A-1- Unprocessed		19-Jan-25		9:00		Soil		X		X				X										1					
		BA2504-A-2- Unprocessed		19-Jan-25		9:00		Soil		X		X				X										1					
		BA2504-A-3- Unprocessed		19-Jan-25		9:00		Soil		X		X				X										1					
		BA2504-A-4- Unprocessed		19-Jan-25		9:00		Soil		X		X				X										1					
		BA2504-A-5- Unprocessed		19-Jan-25		9:00		Soil		X		X				X										1					
		BA2504-A-6- Unprocessed		19-Jan-25		9:00		Soil		X		X				X										1					
		BA2504-A-7- Unprocessed		19-Jan-25		9:00		Soil		X		X				X										1					
		BA2504-A-8- Unprocessed		19-Jan-25		9:00		Soil		X		X				X										1					
		BA2504-A-9- Unprocessed		19-Jan-25		9:00		Soil		X		X				X										1					
		BA2504-A-10- Unprocessed		19-Jan-25		9:00		Soil		X		X				X										1					
		BA2504-A-11- Unprocessed		19-Jan-25		9:00		Soil		X		X				X										1					
		BA2504-A-12- Unprocessed		19-Jan-25		9:00		Soil		X		X				X										1					
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 only)								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:											
		29-Jan-25		0800				Jan 29		12:30		13.3 °C								Yes / No ? If Yes add SIF											
GENF 20.00 Front																															