

Bottom Ash Data

2022 Week 6

The following analytical report represents bottom ash composite results for week 6 of 2022 (February 6, 2022 to February 12, 2022).

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 : **VA22A3031**
Client : **Covanta Burnaby Renewable Energy, ULC**
Contact : Steve McKinney
Address : 5150 Riverbend Drive
Burnaby BC Canada V3N 4V3
Telephone : 604 521 1025
Project : Weekly Bottom Ash - Suite
PO : VANCO 0000051213
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : Standing Offer (BC work)
No. of samples received : 12
No. of samples analysed : 12

Page : 1 of 11
Laboratory : Vancouver - Environmental
Account Manager : Brent Mack
Address : 8081 Lougheed Highway
Burnaby BC Canada V5A 1W9
Telephone : 778-370-3279
Date Samples Received : 15-Feb-2022 11:50
Date Analysis Commenced : 20-Feb-2022
Issue Date : 25-Feb-2022 08:38

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>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Organics, Burnaby, British Columbia



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
%	percent
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

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

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



Analytical Results

Sub-Matrix: Soil/Solid

Client sample ID

(Matrix: Soil/Solid)

					BA2206-A-1	BA2206-A-2	BA2206-A-3	BA2206-A-4	BA2206-A-5
Client sampling date / time					09-Feb-2022 09:00	09-Feb-2022 09:00	09-Feb-2022 09:00	09-Feb-2022 09:00	09-Feb-2022 09:00
Analyte	CAS Number	Method	LOR	Unit	VA22A3031-001	VA22A3031-002	VA22A3031-003	VA22A3031-004	VA22A3031-005
					Result	Result	Result	Result	Result
Physical Tests									
moisture	----	E144	0.25	%	24.2	23.2	23.7	24.7	23.7
pH (1:2 soil:water)	----	E108	0.10	pH units	11.6	11.7	11.5	11.5	11.7
Metals									
aluminum	7429-90-5	E440	50	mg/kg	35400	43600	35900	40200	28800
antimony	7440-36-0	E440	0.10	mg/kg	165	198	165	158	181
arsenic	7440-38-2	E440	0.10	mg/kg	22.6	34.2	24.7	24.7	23.2
barium	7440-39-3	E440	0.50	mg/kg	424	437	456	468	372
beryllium	7440-41-7	E440	0.10	mg/kg	0.38	0.48	0.35	0.38	0.57
bismuth	7440-69-9	E440	0.20	mg/kg	9.98	16.0	14.0	16.7	11.7
boron	7440-42-8	E440	5.0	mg/kg	222	214	200	186	164
cadmium	7440-43-9	E440	0.020	mg/kg	10.9	12.5	53.2	11.2	12.7
calcium	7440-70-2	E440	50	mg/kg	151000	169000	146000	163000	157000
chromium	7440-47-3	E440	0.50	mg/kg	152	243	176	222	186
cobalt	7440-48-4	E440	0.10	mg/kg	40.6	55.5	76.1	102	228
copper	7440-50-8	E440	0.50	mg/kg	2140	1830	23800	2000	11000
iron	7439-89-6	E440	50	mg/kg	69000	61700	62200	69400	59900
lead	7439-92-1	E440	0.50	mg/kg	555	527	1460	469	630
lithium	7439-93-2	E440	2.0	mg/kg	21.9	24.7	23.8	24.4	23.1
magnesium	7439-95-4	E440	20	mg/kg	11400	14800	11700	13800	13500
manganese	7439-96-5	E440	1.0	mg/kg	855	1410	828	928	810
mercury	7439-97-6	E510	0.0500	mg/kg	0.0594	<0.0500	<0.0500	<0.0500	<0.0500
molybdenum	7439-98-7	E440	0.10	mg/kg	110	176	153	99.2	144
nickel	7440-02-0	E440	0.50	mg/kg	185	194	169	282	197
phosphorus	7723-14-0	E440	50	mg/kg	12600	13300	12600	13700	13300
potassium	7440-09-7	E440	100	mg/kg	4880	5800	5110	5460	5520
selenium	7782-49-2	E440	0.20	mg/kg	0.42	0.51	0.66	0.38	0.49
silver	7440-22-4	E440	0.10	mg/kg	6.60	7.42	9.25	5.76	6.81
sodium	7440-23-5	E440	50	mg/kg	14400	16700	14800	16200	16000
strontium	7440-24-6	E440	0.50	mg/kg	357	461	362	363	372
sulfur	7704-34-9	E440	1000	mg/kg	13500	15600	14300	14400	15000



Analytical Results

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

Client sample ID

					BA2206-A-1	BA2206-A-2	BA2206-A-3	BA2206-A-4	BA2206-A-5
Client sampling date / time					09-Feb-2022 09:00	09-Feb-2022 09:00	09-Feb-2022 09:00	09-Feb-2022 09:00	09-Feb-2022 09:00
Analyte	CAS Number	Method	LOR	Unit	VA22A3031-001	VA22A3031-002	VA22A3031-003	VA22A3031-004	VA22A3031-005
					Result	Result	Result	Result	Result
Metals									
thallium	7440-28-0	E440	0.050	mg/kg	0.059	0.072	0.105	0.060	0.077
tin	7440-31-5	E440	2.0	mg/kg	222	175	152	125	667
titanium	7440-32-6	E440	1.0	mg/kg	335	393	357	400	285
tungsten	7440-33-7	E440	0.50	mg/kg	7.83	7.91	7.47	9.18	7.43
uranium	7440-61-1	E440	0.050	mg/kg	6.10	7.06	5.91	6.26	6.59
vanadium	7440-62-2	E440	0.20	mg/kg	44.3	52.5	46.0	51.5	48.4
zinc	7440-66-6	E440	2.0	mg/kg	3960	5780	14100	4160	3930
zirconium	7440-67-7	E440	1.0	mg/kg	1.9	1.6	1.3	1.4	<1.0
TCLP Metals									
pH, TCLP 1st preliminary	----	EPP444	0.010	pH units	12.0	12.1	12.0	12.0	12.1
pH, TCLP 2nd preliminary	----	EPP444	0.010	pH units	10.2	10.1	10.1	10.1	10.1
pH, TCLP extraction fluid initial	----	EPP444	0.010	pH units	2.86	2.86	2.86	2.86	2.86
pH, TCLP final	----	EPP444	0.010	pH units	7.57	7.41	7.65	7.37	7.43
antimony, TCLP	7440-36-0	E444	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
arsenic, TCLP	7440-38-2	E444	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	<2.5	<2.5	<2.5	<2.5
beryllium, TCLP	7440-41-7	E444	0.025	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025
boron, TCLP	7440-42-8	E444	0.50	mg/L	1.93	1.99	1.96	1.88	2.03
cadmium, TCLP	7440-43-9	E444	0.050	mg/L	0.248	<0.050	<0.050	0.069	<0.050
calcium, TCLP	7440-70-2	E444	10	mg/L	1970	2050	1990	1960	2030
chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25
cobalt, TCLP	7440-48-4	E444	0.050	mg/L	0.507	0.270	0.538	0.338	0.448
copper, TCLP	7440-50-8	E444	0.050	mg/L	0.310	0.360	0.371	0.332	0.349
iron, TCLP	7439-89-6	E444	5.0	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0
lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25
magnesium, TCLP	7439-95-4	E444	2.5	mg/L	118	123	121	118	125
mercury, TCLP	7439-97-6	E512	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
nickel, TCLP	7440-02-0	E444	0.25	mg/L	0.26	0.29	0.35	0.40	0.26
selenium, TCLP	7782-49-2	E444	0.10	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10
silver, TCLP	7440-22-4	E444	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
thallium, TCLP	7440-28-0	E444	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0



Analytical Results

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

					Client sample ID	BA2206-A-1	BA2206-A-2	BA2206-A-3	BA2206-A-4	BA2206-A-5
					Client sampling date / time	09-Feb-2022 09:00	09-Feb-2022 09:00	09-Feb-2022 09:00	09-Feb-2022 09:00	09-Feb-2022 09:00
Analyte	CAS Number	Method	LOR	Unit	VA22A3031-001	VA22A3031-002	VA22A3031-003	VA22A3031-004	VA22A3031-005	
					Result	Result	Result	Result	Result	
TCLP Metals										
uranium, TCLP	7440-61-1	E444	0.20	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
zinc, TCLP	7440-66-6	E444	0.50	mg/L	1.48	1.40	2.03	2.88	0.98	
zirconium, TCLP	7440-67-7	E444	10	mg/L	<10	<10	<10	<10	<10	<10

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



Analytical Results

Sub-Matrix: Soil/Solid (Matrix: Soil/Solid)					Client sample ID	BA2206-A-6	BA2206-A-7	BA2206-A-8	BA2206-A-9	BA2206-A-10
Client sampling date / time					09-Feb-2022 09:00	09-Feb-2022 09:00	09-Feb-2022 09:00	09-Feb-2022 09:00	09-Feb-2022 09:00	09-Feb-2022 09:00
Analyte	CAS Number	Method	LOR	Unit	VA22A3031-006	VA22A3031-007	VA22A3031-008	VA22A3031-009	VA22A3031-010	
					Result	Result	Result	Result	Result	
Physical Tests										
moisture	----	E144	0.25	%	23.7	23.6	21.5	22.6	23.0	
pH (1:2 soil:water)	----	E108	0.10	pH units	11.6	11.5	11.6	11.6	11.7	
Metals										
aluminum	7429-90-5	E440	50	mg/kg	32600	46900	31600	32700	34300	
antimony	7440-36-0	E440	0.10	mg/kg	1000	152	159	161	187	
arsenic	7440-38-2	E440	0.10	mg/kg	32.0	20.4	25.9	22.8	25.1	
barium	7440-39-3	E440	0.50	mg/kg	365	457	406	386	485	
beryllium	7440-41-7	E440	0.10	mg/kg	0.42	0.36	0.35	0.41	0.41	
bismuth	7440-69-9	E440	0.20	mg/kg	17.3	9.46	9.29	10.7	13.0	
boron	7440-42-8	E440	5.0	mg/kg	168	154	205	260	180	
cadmium	7440-43-9	E440	0.020	mg/kg	11.5	11.2	10.1	14.8	19.4	
calcium	7440-70-2	E440	50	mg/kg	152000	136000	145000	153000	174000	
chromium	7440-47-3	E440	0.50	mg/kg	158	188	187	178	194	
cobalt	7440-48-4	E440	0.10	mg/kg	182	36.1	456	108	30.4	
copper	7440-50-8	E440	0.50	mg/kg	3240	3070	10600	4620	3260	
iron	7439-89-6	E440	50	mg/kg	62900	64000	69900	69300	50700	
lead	7439-92-1	E440	0.50	mg/kg	6840	311	1640	556	460	
lithium	7439-93-2	E440	2.0	mg/kg	22.7	34.6	28.1	25.8	22.0	
magnesium	7439-95-4	E440	20	mg/kg	13100	12100	11400	11200	14300	
manganese	7439-96-5	E440	1.0	mg/kg	866	867	967	919	782	
mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	
molybdenum	7439-98-7	E440	0.10	mg/kg	191	78.8	91.3	92.3	173	
nickel	7440-02-0	E440	0.50	mg/kg	123	474	250	270	147	
phosphorus	7723-14-0	E440	50	mg/kg	14500	11400	12300	12500	15000	
potassium	7440-09-7	E440	100	mg/kg	5560	5390	5160	5500	5630	
selenium	7782-49-2	E440	0.20	mg/kg	0.41	0.37	0.35	0.42	0.43	
silver	7440-22-4	E440	0.10	mg/kg	7.26	8.18	5.27	12.0	6.08	
sodium	7440-23-5	E440	50	mg/kg	16000	15600	14400	16200	16700	
strontium	7440-24-6	E440	0.50	mg/kg	362	358	334	388	413	
sulfur	7704-34-9	E440	1000	mg/kg	13800	13200	13600	14200	15200	
thallium	7440-28-0	E440	0.050	mg/kg	0.065	0.056	0.062	0.063	0.088	



Analytical Results

Sub-Matrix: Soil/Solid

Client sample ID

(Matrix: Soil/Solid)

					BA2206-A-6	BA2206-A-7	BA2206-A-8	BA2206-A-9	BA2206-A-10
Client sampling date / time					09-Feb-2022 09:00	09-Feb-2022 09:00	09-Feb-2022 09:00	09-Feb-2022 09:00	09-Feb-2022 09:00
Analyte	CAS Number	Method	LOR	Unit	VA22A3031-006	VA22A3031-007	VA22A3031-008	VA22A3031-009	VA22A3031-010
					Result	Result	Result	Result	Result
Metals									
tin	7440-31-5	E440	2.0	mg/kg	203	167	143	240	157
titanium	7440-32-6	E440	1.0	mg/kg	286	573	342	307	343
tungsten	7440-33-7	E440	0.50	mg/kg	7.01	10.5	7.44	7.78	7.62
uranium	7440-61-1	E440	0.050	mg/kg	6.09	5.61	5.69	6.04	6.64
vanadium	7440-62-2	E440	0.20	mg/kg	44.8	46.5	44.1	49.4	49.7
zinc	7440-66-6	E440	2.0	mg/kg	4790	4420	8270	10200	6920
zirconium	7440-67-7	E440	1.0	mg/kg	1.4	2.4	1.3	1.5	1.2
TCLP Metals									
pH, TCLP 1st preliminary	----	EPP444	0.010	pH units	11.9	12.0	11.9	11.8	11.9
pH, TCLP 2nd preliminary	----	EPP444	0.010	pH units	10.0	9.94	10.0	10.1	10.1
pH, TCLP extraction fluid initial	----	EPP444	0.010	pH units	2.86	2.86	2.86	2.86	2.86
pH, TCLP final	----	EPP444	0.010	pH units	7.17	7.52	7.32	7.31	7.45
antimony, TCLP	7440-36-0	E444	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
arsenic, TCLP	7440-38-2	E444	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	<2.5	<2.5	<2.5	<2.5
beryllium, TCLP	7440-41-7	E444	0.025	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025
boron, TCLP	7440-42-8	E444	0.50	mg/L	2.01	1.83	2.11	2.05	2.02
cadmium, TCLP	7440-43-9	E444	0.050	mg/L	0.050	<0.050	<0.050	0.051	<0.050
calcium, TCLP	7440-70-2	E444	10	mg/L	2040	1860	2070	2020	2000
chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25
cobalt, TCLP	7440-48-4	E444	0.050	mg/L	0.310	0.533	0.342	0.363	0.402
copper, TCLP	7440-50-8	E444	0.050	mg/L	0.384	0.311	0.360	0.408	0.353
iron, TCLP	7439-89-6	E444	5.0	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0
lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25
magnesium, TCLP	7439-95-4	E444	2.5	mg/L	123	116	127	120	126
mercury, TCLP	7439-97-6	E512	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
nickel, TCLP	7440-02-0	E444	0.25	mg/L	0.28	0.28	0.28	0.30	<0.25
selenium, TCLP	7782-49-2	E444	0.10	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10
silver, TCLP	7440-22-4	E444	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
thallium, TCLP	7440-28-0	E444	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
uranium, TCLP	7440-61-1	E444	0.20	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20



Analytical Results

Sub-Matrix: Soil/Solid (Matrix: Soil/Solid)					Client sample ID	BA2206-A-6	BA2206-A-7	BA2206-A-8	BA2206-A-9	BA2206-A-10
Client sampling date / time					09-Feb-2022 09:00	09-Feb-2022 09:00	09-Feb-2022 09:00	09-Feb-2022 09:00	09-Feb-2022 09:00	09-Feb-2022 09:00
Analyte	CAS Number	Method	LOR	Unit	VA22A3031-006	VA22A3031-007	VA22A3031-008	VA22A3031-009	VA22A3031-010	
					Result	Result	Result	Result	Result	
TCLP Metals										
vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
zinc, TCLP	7440-66-6	E444	0.50	mg/L	3.11	0.52	1.54	1.45	0.85	
zirconium, TCLP	7440-67-7	E444	10	mg/L	<10	<10	<10	<10	<10	

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



Analytical Results

Sub-Matrix: Soil/Solid					Client sample ID	BA2206-A-11	BA2206-A-12	----	----	----
(Matrix: Soil/Solid)					Client sampling date / time	09-Feb-2022 09:00	09-Feb-2022 09:00	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA22A3031-011	VA22A3031-012	-----	-----	-----	
					Result	Result	---	---	---	
Physical Tests										
moisture	----	E144	0.25	%	24.0	24.2	----	----	----	
pH (1:2 soil:water)	----	E108	0.10	pH units	12.0	12.1	----	----	----	
Metals										
aluminum	7429-90-5	E440	50	mg/kg	31000	34100	----	----	----	
antimony	7440-36-0	E440	0.10	mg/kg	233	170	----	----	----	
arsenic	7440-38-2	E440	0.10	mg/kg	27.4	20.8	----	----	----	
barium	7440-39-3	E440	0.50	mg/kg	396	515	----	----	----	
beryllium	7440-41-7	E440	0.10	mg/kg	0.43	0.42	----	----	----	
bismuth	7440-69-9	E440	0.20	mg/kg	10.9	10.2	----	----	----	
boron	7440-42-8	E440	5.0	mg/kg	236	210	----	----	----	
cadmium	7440-43-9	E440	0.020	mg/kg	11.6	10.9	----	----	----	
calcium	7440-70-2	E440	50	mg/kg	154000	160000	----	----	----	
chromium	7440-47-3	E440	0.50	mg/kg	185	190	----	----	----	
cobalt	7440-48-4	E440	0.10	mg/kg	78.7	330	----	----	----	
copper	7440-50-8	E440	0.50	mg/kg	5070	5200	----	----	----	
iron	7439-89-6	E440	50	mg/kg	68000	70500	----	----	----	
lead	7439-92-1	E440	0.50	mg/kg	379	323	----	----	----	
lithium	7439-93-2	E440	2.0	mg/kg	24.9	24.1	----	----	----	
magnesium	7439-95-4	E440	20	mg/kg	12100	11800	----	----	----	
manganese	7439-96-5	E440	1.0	mg/kg	1020	849	----	----	----	
mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	----	----	----	
molybdenum	7439-98-7	E440	0.10	mg/kg	104	98.7	----	----	----	
nickel	7440-02-0	E440	0.50	mg/kg	168	167	----	----	----	
phosphorus	7723-14-0	E440	50	mg/kg	9840	11700	----	----	----	
potassium	7440-09-7	E440	100	mg/kg	4600	4880	----	----	----	
selenium	7782-49-2	E440	0.20	mg/kg	0.41	0.41	----	----	----	
silver	7440-22-4	E440	0.10	mg/kg	6.35	11.8	----	----	----	
sodium	7440-23-5	E440	50	mg/kg	14200	15400	----	----	----	
strontium	7440-24-6	E440	0.50	mg/kg	368	380	----	----	----	
sulfur	7704-34-9	E440	1000	mg/kg	13900	13400	----	----	----	
thallium	7440-28-0	E440	0.050	mg/kg	0.060	0.061	----	----	----	



Analytical Results

Sub-Matrix: Soil/Solid (Matrix: Soil/Solid)					Client sample ID	BA2206-A-11	BA2206-A-12	----	----	----
Client sampling date / time					09-Feb-2022 09:00	09-Feb-2022 09:00	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	VA22A3031-011	VA22A3031-012	-----	-----	-----	
					Result	Result	---	---	---	
Metals										
tin	7440-31-5	E440	2.0	mg/kg	1360	155	---	---	---	
titanium	7440-32-6	E440	1.0	mg/kg	304	594	---	---	---	
tungsten	7440-33-7	E440	0.50	mg/kg	16.3	9.26	---	---	---	
uranium	7440-61-1	E440	0.050	mg/kg	6.97	5.78	---	---	---	
vanadium	7440-62-2	E440	0.20	mg/kg	48.3	50.0	---	---	---	
zinc	7440-66-6	E440	2.0	mg/kg	4280	5730	---	---	---	
zirconium	7440-67-7	E440	1.0	mg/kg	1.7	1.2	---	---	---	
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444	0.010	pH units	11.9	11.8	---	---	---	
pH, TCLP 2nd preliminary	----	EPP444	0.010	pH units	10.2	10.0	---	---	---	
pH, TCLP extraction fluid initial	----	EPP444	0.010	pH units	2.86	2.86	---	---	---	
pH, TCLP final	----	EPP444	0.010	pH units	7.36	7.33	---	---	---	
antimony, TCLP	7440-36-0	E444	1.0	mg/L	<1.0	<1.0	---	---	---	
arsenic, TCLP	7440-38-2	E444	1.0	mg/L	<1.0	<1.0	---	---	---	
barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	<2.5	---	---	---	
beryllium, TCLP	7440-41-7	E444	0.025	mg/L	<0.025	<0.025	---	---	---	
boron, TCLP	7440-42-8	E444	0.50	mg/L	2.05	1.83	---	---	---	
cadmium, TCLP	7440-43-9	E444	0.050	mg/L	<0.050	<0.050	---	---	---	
calcium, TCLP	7440-70-2	E444	10	mg/L	2000	1850	---	---	---	
chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	<0.25	---	---	---	
cobalt, TCLP	7440-48-4	E444	0.050	mg/L	0.269	0.431	---	---	---	
copper, TCLP	7440-50-8	E444	0.050	mg/L	0.319	0.296	---	---	---	
iron, TCLP	7439-89-6	E444	5.0	mg/L	<5.0	<5.0	---	---	---	
lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	<0.25	---	---	---	
magnesium, TCLP	7439-95-4	E444	2.5	mg/L	125	124	---	---	---	
mercury, TCLP	7439-97-6	E512	0.0010	mg/L	<0.0010	<0.0010	---	---	---	
nickel, TCLP	7440-02-0	E444	0.25	mg/L	0.27	0.30	---	---	---	
selenium, TCLP	7782-49-2	E444	0.10	mg/L	<0.10	<0.10	---	---	---	
silver, TCLP	7440-22-4	E444	0.050	mg/L	<0.050	<0.050	---	---	---	
thallium, TCLP	7440-28-0	E444	1.0	mg/L	<1.0	<1.0	---	---	---	
uranium, TCLP	7440-61-1	E444	0.20	mg/L	<0.20	<0.20	---	---	---	



Analytical Results

Sub-Matrix: Soil/Solid (Matrix: Soil/Solid)					Client sample ID	BA2206-A-11	BA2206-A-12	----	----	----
Client sampling date / time					09-Feb-2022 09:00	09-Feb-2022 09:00	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	VA22A3031-011	VA22A3031-012	-----	-----	-----	
					Result	Result	---	---	---	
TCLP Metals										
vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	<0.15	----	----	----	
zinc, TCLP	7440-66-6	E444	0.50	mg/L	1.17	1.94	----	----	----	
zirconium, TCLP	7440-67-7	E444	10	mg/L	<10	<10	----	----	----	

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22A3031	Page	: 1 of 16
Client	: Covanta Burnaby Renewable Energy, ULC	Laboratory	: Vancouver - Environmental
Contact	: Steve McKinney	Account Manager	: Brent Mack
Address	: 5150 Riverbend Drive Burnaby BC Canada V3N 4V3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 521 1025	Telephone	: 778-370-3279
Project	: Weekly Bottom Ash - Suite	Date Samples Received	: 15-Feb-2022 11:50
PO	: VANCO 0000051213	Issue Date	: 25-Feb-2022 08:38
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: Standing Offer (BC work)		
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 Services 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	antimony	7440-36-0	E440	0.25 % ^{DUP-H}	Diff <2x LOR	Low Level DUP DQO exceeded (difference > 2 LOR).

Result Qualifiers

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



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 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 BA2206-A-1	E510	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	28 days	13 days	✓	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2206-A-10	E510	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	28 days	13 days	✓	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2206-A-2	E510	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	28 days	13 days	✓	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2206-A-3	E510	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	28 days	13 days	✓	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2206-A-4	E510	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	28 days	13 days	✓	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2206-A-5	E510	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	28 days	13 days	✓	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2206-A-6	E510	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	28 days	13 days	✓	



Matrix: Soil/Solid

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

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2206-A-7	E510	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	28 days	13 days	✔	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2206-A-8	E510	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	28 days	13 days	✔	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2206-A-9	E510	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	28 days	13 days	✔	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2206-A-11	E510	09-Feb-2022	23-Feb-2022	----	----		23-Feb-2022	28 days	14 days	✔	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2206-A-12	E510	09-Feb-2022	23-Feb-2022	----	----		23-Feb-2022	28 days	14 days	✔	
Metals : Metals in Soil/Solid by CRC ICPMS											
LDPE bag BA2206-A-1	E440	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	180 days	13 days	✔	
Metals : Metals in Soil/Solid by CRC ICPMS											
LDPE bag BA2206-A-10	E440	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	180 days	13 days	✔	
Metals : Metals in Soil/Solid by CRC ICPMS											
LDPE bag BA2206-A-2	E440	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	180 days	13 days	✔	
Metals : Metals in Soil/Solid by CRC ICPMS											
LDPE bag BA2206-A-3	E440	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	180 days	13 days	✔	



Matrix: Soil/Solid

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

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2206-A-4	E440	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	180 days	13 days	✔	
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2206-A-5	E440	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	180 days	13 days	✔	
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2206-A-6	E440	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	180 days	13 days	✔	
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2206-A-7	E440	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	180 days	13 days	✔	
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2206-A-8	E440	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	180 days	13 days	✔	
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2206-A-9	E440	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	180 days	13 days	✔	
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2206-A-11	E440	09-Feb-2022	23-Feb-2022	----	----		23-Feb-2022	180 days	14 days	✔	
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2206-A-12	E440	09-Feb-2022	23-Feb-2022	----	----		23-Feb-2022	180 days	14 days	✔	
Physical Tests : Moisture Content by Gravimetry											
LDPE bag BA2206-A-1	E144	09-Feb-2022	----	----	----		20-Feb-2022	----	----		



Matrix: Soil/Solid

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

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2206-A-10	E144	09-Feb-2022	----	----	----		20-Feb-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2206-A-11	E144	09-Feb-2022	----	----	----		22-Feb-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2206-A-12	E144	09-Feb-2022	----	----	----		22-Feb-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2206-A-2	E144	09-Feb-2022	----	----	----		20-Feb-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2206-A-3	E144	09-Feb-2022	----	----	----		20-Feb-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2206-A-4	E144	09-Feb-2022	----	----	----		20-Feb-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2206-A-5	E144	09-Feb-2022	----	----	----		20-Feb-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2206-A-6	E144	09-Feb-2022	----	----	----		20-Feb-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2206-A-7	E144	09-Feb-2022	----	----	----		20-Feb-2022	----	----	



Matrix: Soil/Solid

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

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Physical Tests : Moisture Content by Gravimetry											
LDPE bag BA2206-A-8	E144	09-Feb-2022	----	----	----		20-Feb-2022	----	----		
Physical Tests : Moisture Content by Gravimetry											
LDPE bag BA2206-A-9	E144	09-Feb-2022	----	----	----		20-Feb-2022	----	----		
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2206-A-1	E108	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	30 days	13 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2206-A-10	E108	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	30 days	13 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2206-A-2	E108	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	30 days	13 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2206-A-3	E108	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	30 days	13 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2206-A-4	E108	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	30 days	13 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2206-A-5	E108	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	30 days	13 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2206-A-6	E108	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	30 days	13 days	✔	



Matrix: Soil/Solid

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

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2206-A-7	E108	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	30 days	13 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2206-A-8	E108	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	30 days	13 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2206-A-9	E108	09-Feb-2022	22-Feb-2022	----	----		22-Feb-2022	30 days	13 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2206-A-11	E108	09-Feb-2022	23-Feb-2022	----	----		23-Feb-2022	30 days	14 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2206-A-12	E108	09-Feb-2022	23-Feb-2022	----	----		23-Feb-2022	30 days	14 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2206-A-1	E512	22-Feb-2022	----	----	----		23-Feb-2022	28 days	14 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2206-A-10	E512	22-Feb-2022	----	----	----		23-Feb-2022	28 days	14 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2206-A-11	E512	22-Feb-2022	----	----	----		23-Feb-2022	28 days	14 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2206-A-12	E512	22-Feb-2022	----	----	----		23-Feb-2022	28 days	14 days	✔	



Matrix: Soil/Solid

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

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2206-A-2	E512	22-Feb-2022	----	----	----		23-Feb-2022	28 days	14 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2206-A-3	E512	22-Feb-2022	----	----	----		23-Feb-2022	28 days	14 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2206-A-4	E512	22-Feb-2022	----	----	----		23-Feb-2022	28 days	14 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2206-A-5	E512	22-Feb-2022	----	----	----		23-Feb-2022	28 days	14 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2206-A-6	E512	22-Feb-2022	----	----	----		23-Feb-2022	28 days	14 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2206-A-7	E512	22-Feb-2022	----	----	----		23-Feb-2022	28 days	14 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2206-A-8	E512	22-Feb-2022	----	----	----		23-Feb-2022	28 days	14 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2206-A-9	E512	22-Feb-2022	----	----	----		23-Feb-2022	28 days	14 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2206-A-1	E444	22-Feb-2022	----	----	----		23-Feb-2022	180 days	14 days	✔	



Matrix: Soil/Solid

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

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2206-A-10	E444	22-Feb-2022	----	----	----		23-Feb-2022	180 days	14 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2206-A-11	E444	22-Feb-2022	----	----	----		23-Feb-2022	180 days	14 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2206-A-12	E444	22-Feb-2022	----	----	----		23-Feb-2022	180 days	14 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2206-A-2	E444	22-Feb-2022	----	----	----		23-Feb-2022	180 days	14 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2206-A-3	E444	22-Feb-2022	----	----	----		23-Feb-2022	180 days	14 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2206-A-4	E444	22-Feb-2022	----	----	----		23-Feb-2022	180 days	14 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2206-A-5	E444	22-Feb-2022	----	----	----		23-Feb-2022	180 days	14 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2206-A-6	E444	22-Feb-2022	----	----	----		23-Feb-2022	180 days	14 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2206-A-7	E444	22-Feb-2022	----	----	----		23-Feb-2022	180 days	14 days	✔	



Matrix: Soil/Solid

Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2206-A-8	E444	22-Feb-2022	----	----	----		23-Feb-2022	180 days	14 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved) BA2206-A-9	E444	22-Feb-2022	----	----	----		23-Feb-2022	180 days	14 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI) BA2206-A-1	EPP444	09-Feb-2022	22-Feb-2022	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI) BA2206-A-10	EPP444	09-Feb-2022	22-Feb-2022	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI) BA2206-A-11	EPP444	09-Feb-2022	22-Feb-2022	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI) BA2206-A-12	EPP444	09-Feb-2022	22-Feb-2022	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI) BA2206-A-2	EPP444	09-Feb-2022	22-Feb-2022	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI) BA2206-A-3	EPP444	09-Feb-2022	22-Feb-2022	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI) BA2206-A-4	EPP444	09-Feb-2022	22-Feb-2022	----	----		----	----	----	



Matrix: **Soil/Solid**

Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI) BA2206-A-5	EPP444	09-Feb-2022	22-Feb-2022	----	----		----	----	----		
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI) BA2206-A-6	EPP444	09-Feb-2022	22-Feb-2022	----	----		----	----	----		
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI) BA2206-A-7	EPP444	09-Feb-2022	22-Feb-2022	----	----		----	----	----		
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI) BA2206-A-8	EPP444	09-Feb-2022	22-Feb-2022	----	----		----	----	----		
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 28 day HT (e.g. Hg, CrVI) BA2206-A-9	EPP444	09-Feb-2022	22-Feb-2022	----	----		----	----	----		

Legend & Qualifier Definitions

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



Quality Control Parameter Frequency Compliance

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

Matrix: **Soil/Solid**

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

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
Analytical Methods							
Laboratory Duplicates (DUP)							
Mercury in Soil/Solid by CVAAS	E510	414839	2	22	9.0	5.0	✔
Metals in Soil/Solid by CRC ICPMS	E440	415708	3	22	13.6	5.0	✔
Moisture Content by Gravimetry	E144	415712	2	25	8.0	5.0	✔
pH by Meter (1:2 Soil:Water Extraction)	E108	415709	2	22	9.0	5.0	✔
Laboratory Control Samples (LCS)							
Mercury in Soil/Solid by CVAAS	E510	414839	4	22	18.1	10.0	✔
Metals in Soil/Solid by CRC ICPMS	E440	415708	5	22	22.7	10.0	✔
Moisture Content by Gravimetry	E144	415712	2	25	8.0	5.0	✔
pH by Meter (1:2 Soil:Water Extraction)	E108	415709	2	22	9.0	5.0	✔
Method Blanks (MB)							
Mercury by CVAAS (TCLP)	E512	415914	1	12	8.3	5.0	✔
Mercury in Soil/Solid by CVAAS	E510	414839	2	22	9.0	5.0	✔
Metals by CRC ICPMS (TCLP)	E444	415915	1	12	8.3	5.0	✔
Metals in Soil/Solid by CRC ICPMS	E440	415708	2	22	9.0	5.0	✔
Moisture Content by Gravimetry	E144	415712	2	25	8.0	5.0	✔
Matrix Spikes (MS)							
Mercury by CVAAS (TCLP)	E512	415914	1	12	8.3	5.0	✔
Metals by CRC ICPMS (TCLP)	E444	415915	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 Vancouver - Environmental	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 Vancouver - Environmental	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 Vancouver - Environmental	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. Elemental Sulfur may be poorly recovered by this method. Analysis is by Collision/Reaction Cell ICPMS.
Metals by CRC ICPMS (TCLP)	E444 Vancouver - Environmental	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 Vancouver - Environmental	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 Vancouver - Environmental	Soil/Solid	SW 846 -1311/245.1 CVAA ON TCLP LEACHATE	An extract produced by the Toxicity Characteristic Leachate Procedure (TCLP) as per EPA 1311 is analyzed by CVAAS.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108 Vancouver - Environmental	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.
Digestion for Metals and Mercury	EP440 Vancouver - Environmental	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.



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)	EPP444 Vancouver - Environmental	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 : VA22A3031

Page : 1 of 15

Client : Covanta Burnaby Renewable Energy, ULC
Contact : Steve McKinney
Address : 5150 Riverbend Drive
Burnaby BC Canada V3N 4V3
Telephone : 604 521 1025
Project : Weekly Bottom Ash - Suite
PO : VANCO 0000051213
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : Standing Offer (BC work)
No. of samples received : 12
No. of samples analysed : 12

Laboratory : Vancouver - Environmental
Account Manager : Brent Mack
Address : 8081 Lougheed Highway
Burnaby, British Columbia Canada V5A 1W9
Telephone : 778-370-3279
Date Samples Received : 15-Feb-2022 11:50
Date Analysis Commenced : 20-Feb-2022
Issue Date : 25-Feb-2022 08:38

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

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

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Table with 3 columns: Signatories, Position, Laboratory Department. Rows include Angela Ren (Team Leader - Metals), Caleb Deroche (Lab Analyst), Dee Lee (Analyst), and Ophelia Chiu (Department Manager - Organics).

Page : 2 of 15
Work Order : VA22A3031
Client : Covanta Burnaby Renewable Energy, ULC
Project : Weekly Bottom Ash - Suite



General Comments

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

Key :

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

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

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

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

Workorder Comments

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



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Soil/Solid

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 414841)											
VA22A2968-001	Anonymous	pH (1:2 soil:water)	----	E108	0.10	pH units	7.82	7.93	1.4%	5%	----
Physical Tests (QC Lot: 414844)											
VA22A3031-001	BA2206-A-1	moisture	----	E144	0.25	%	24.2	24.2	0.102%	20%	----
Physical Tests (QC Lot: 415709)											
VA22A2692-024	Anonymous	pH (1:2 soil:water)	----	E108	0.10	pH units	7.58	7.62	0.5%	5%	----
Physical Tests (QC Lot: 415712)											
VA22A2692-024	Anonymous	moisture	----	E144	0.25	%	17.0	15.2	10.6%	20%	----
Metals (QC Lot: 414839)											
VA22A2968-001	Anonymous	mercury	7439-97-6	E510	0.0500	mg/kg	0.0979	0.0948	0.0031	Diff <2x LOR	----
Metals (QC Lot: 414840)											
VA22A2968-001	Anonymous	aluminum	7429-90-5	E440	50	mg/kg	14000	13000	7.05%	40%	----
		antimony	7440-36-0	E440	0.10	mg/kg	4.34	5.27	19.4%	30%	----
		arsenic	7440-38-2	E440	0.10	mg/kg	5.30	4.60	14.0%	30%	----
		barium	7440-39-3	E440	0.50	mg/kg	260	238	8.92%	40%	----
		beryllium	7440-41-7	E440	0.10	mg/kg	0.23	0.22	0.02	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	9.2	8.7	0.6	Diff <2x LOR	----
		cadmium	7440-43-9	E440	0.020	mg/kg	0.642	0.580	10.2%	30%	----
		calcium	7440-70-2	E440	50	mg/kg	8630	8130	5.93%	30%	----
		chromium	7440-47-3	E440	0.50	mg/kg	22.9	20.5	11.2%	30%	----
		cobalt	7440-48-4	E440	0.10	mg/kg	7.03	5.83	18.7%	30%	----
		copper	7440-50-8	E440	0.50	mg/kg	118	101	15.6%	30%	----
		iron	7439-89-6	E440	50	mg/kg	24400	21000	15.0%	30%	----
		lead	7439-92-1	E440	0.50	mg/kg	196	209	6.80%	40%	----
		lithium	7439-93-2	E440	2.0	mg/kg	7.4	6.3	1.1	Diff <2x LOR	----
		magnesium	7439-95-4	E440	20	mg/kg	4790	3860	21.5%	30%	----
		manganese	7439-96-5	E440	1.0	mg/kg	346	314	9.62%	30%	----
		molybdenum	7439-98-7	E440	0.10	mg/kg	1.01	0.97	3.96%	40%	----
		nickel	7440-02-0	E440	0.50	mg/kg	17.6	20.7	15.9%	30%	----
		phosphorus	7723-14-0	E440	50	mg/kg	780	768	1.54%	30%	----
		potassium	7440-09-7	E440	100	mg/kg	880	820	6.54%	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: 414840) - continued											
VA22A2968-001	Anonymous	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	0.32	0.30	0.02	Diff <2x LOR	----
		sodium	7440-23-5	E440	50	mg/kg	430	390	9.83%	40%	----
		strontium	7440-24-6	E440	0.50	mg/kg	109	93.0	16.1%	40%	----
		sulfur	7704-34-9	E440	1000	mg/kg	<1000	<1000	0	Diff <2x LOR	----
		thallium	7440-28-0	E440	0.050	mg/kg	0.053	0.058	0.004	Diff <2x LOR	----
		tin	7440-31-5	E440	2.0	mg/kg	35.7	29.9	17.6%	40%	----
		titanium	7440-32-6	E440	1.0	mg/kg	711	650	8.99%	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	0.581	0.560	3.66%	30%	----
		vanadium	7440-62-2	E440	0.20	mg/kg	63.8	61.8	3.24%	30%	----
		zinc	7440-66-6	E440	2.0	mg/kg	346	289	18.1%	30%	----
		zirconium	7440-67-7	E440	1.0	mg/kg	3.8	3.6	0.2	Diff <2x LOR	----
Metals (QC Lot: 415707)											
VA22A2692-024	Anonymous	mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	0	Diff <2x LOR	----
Metals (QC Lot: 415708)											
VA22A2692-024	Anonymous	uranium	7440-61-1	E440	0.050	mg/kg	0.406	0.395	2.53%	30%	----
VA22A2692-024	Anonymous	aluminum	7429-90-5	E440	50	mg/kg	17000	16100	5.87%	40%	----
		antimony	7440-36-0	E440	0.10	mg/kg	0.54	# 0.29	0.25	Diff <2x LOR	DUP-H
		arsenic	7440-38-2	E440	0.10	mg/kg	2.16	2.16	0.0560%	30%	----
		barium	7440-39-3	E440	0.50	mg/kg	34.9	33.3	4.78%	40%	----
		beryllium	7440-41-7	E440	0.10	mg/kg	0.19	0.19	0.001	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	0.121	0.116	0.005	Diff <2x LOR	----
		calcium	7440-70-2	E440	50	mg/kg	4080	3950	3.36%	30%	----
		chromium	7440-47-3	E440	0.50	mg/kg	9.70	9.64	0.673%	30%	----
		cobalt	7440-48-4	E440	0.10	mg/kg	3.91	4.04	3.25%	30%	----
		copper	7440-50-8	E440	0.50	mg/kg	14.1	13.2	6.82%	30%	----
		iron	7439-89-6	E440	50	mg/kg	12300	12400	0.432%	30%	----
		lead	7439-92-1	E440	0.50	mg/kg	35.9	32.8	9.11%	40%	----
		lithium	7439-93-2	E440	2.0	mg/kg	5.4	5.4	0.03	Diff <2x LOR	----
		magnesium	7439-95-4	E440	20	mg/kg	2700	2770	2.34%	30%	----
		manganese	7439-96-5	E440	1.0	mg/kg	172	167	3.16%	30%	----
		molybdenum	7439-98-7	E440	0.10	mg/kg	0.53	0.50	5.03%	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: 415708) - continued											
VA22A2692-024	Anonymous	nickel	7440-02-0	E440	0.50	mg/kg	7.43	7.13	4.14%	30%	----
		phosphorus	7723-14-0	E440	50	mg/kg	476	429	10.4%	30%	----
		potassium	7440-09-7	E440	100	mg/kg	410	370	40	Diff <2x LOR	----
		selenium	7782-49-2	E440	0.20	mg/kg	0.29	0.28	0.009	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	270	264	2.41%	40%	----
		strontium	7440-24-6	E440	0.50	mg/kg	28.0	27.5	1.75%	40%	----
		sulfur	7704-34-9	E440	1000	mg/kg	<1000	<1000	0	Diff <2x LOR	----
		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	<2.0	<2.0	0	Diff <2x LOR	----
		titanium	7440-32-6	E440	1.0	mg/kg	708	684	3.36%	40%	----
		tungsten	7440-33-7	E440	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		vanadium	7440-62-2	E440	0.20	mg/kg	35.8	34.5	3.69%	30%	----
		zinc	7440-66-6	E440	2.0	mg/kg	61.4	59.4	3.26%	30%	----
		zirconium	7440-67-7	E440	1.0	mg/kg	1.6	2.0	0.4	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: 414844)						
moisture	---	E144	0.25	%	<0.25	---
Physical Tests (QCLot: 415712)						
moisture	---	E144	0.25	%	<0.25	---
Metals (QCLot: 414839)						
mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	---
Metals (QCLot: 414840)						
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	---



Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 414840) - continued						
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	----
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: 415707)						
mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 415708)						
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	----



Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 415708) - continued						
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	----
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: 415914)						
mercury, TCLP	7439-97-6	E512	0.001	mg/L	<0.0010	----
TCLP Metals (QCLot: 415915)						
antimony, TCLP	7440-36-0	E444	1	mg/L	<1.0	----
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				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Physical Tests (QCLot: 414841)									
pH (1:2 soil:water)	----	E108	----	pH units	6 pH units	99.7	95.0	105	----
Physical Tests (QCLot: 414844)									
moisture	----	E144	0.25	%	50 %	100	90.0	110	----
Physical Tests (QCLot: 415709)									
pH (1:2 soil:water)	----	E108	----	pH units	6 pH units	99.7	95.0	105	----
Physical Tests (QCLot: 415712)									
moisture	----	E144	0.25	%	50 %	99.2	90.0	110	----
Metals (QCLot: 414839)									
mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	101	80.0	120	----
Metals (QCLot: 414840)									
aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	104	80.0	120	----
antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	116	80.0	120	----
arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	106	80.0	120	----
barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	105	80.0	120	----
beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	104	80.0	120	----
bismuth	7440-69-9	E440	0.2	mg/kg	100 mg/kg	108	80.0	120	----
boron	7440-42-8	E440	5	mg/kg	100 mg/kg	100.0	80.0	120	----
cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	106	80.0	120	----
calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	105	80.0	120	----
chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	102	80.0	120	----
cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	99.0	80.0	120	----
copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	99.6	80.0	120	----
iron	7439-89-6	E440	50	mg/kg	100 mg/kg	102	80.0	120	----
lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	110	80.0	120	----
lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	102	80.0	120	----
magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	104	80.0	120	----
manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	103	80.0	120	----
molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	106	80.0	120	----
nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	101	80.0	120	----
phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	111	80.0	120	----
potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	105	80.0	120	----
selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	103	80.0	120	----
silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	102	80.0	120	----



Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Metals (QCLot: 414840) - continued									
sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	100	80.0	120	----
strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	113	80.0	120	----
sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	102	80.0	120	----
thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	112	80.0	120	----
tin	7440-31-5	E440	2	mg/kg	50 mg/kg	103	80.0	120	----
titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	96.0	80.0	120	----
tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	102	80.0	120	----
uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	112	80.0	120	----
vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	103	80.0	120	----
zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	98.8	80.0	120	----
zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	109	80.0	120	----
Metals (QCLot: 415707)									
mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	101	80.0	120	----
Metals (QCLot: 415708)									
aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	99.8	80.0	120	----
antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	104	80.0	120	----
arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	97.5	80.0	120	----
barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	97.3	80.0	120	----
beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	95.7	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	96.3	80.0	120	----
cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	99.6	80.0	120	----
calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	98.8	80.0	120	----
chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	97.6	80.0	120	----
cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	95.2	80.0	120	----
copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	93.2	80.0	120	----
iron	7439-89-6	E440	50	mg/kg	100 mg/kg	103	80.0	120	----
lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	96.4	80.0	120	----
lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	95.5	80.0	120	----
magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	98.5	80.0	120	----
manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	97.2	80.0	120	----
molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	99.3	80.0	120	----
nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	95.9	80.0	120	----
phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	88.6	80.0	120	----
potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	94.7	80.0	120	----
selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	101	80.0	120	----
silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	88.7	80.0	120	----



Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Metals (QCLot: 415708) - continued									
sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	96.3	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	92.2	80.0	120	----
thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	96.9	80.0	120	----
tin	7440-31-5	E440	2	mg/kg	50 mg/kg	97.4	80.0	120	----
titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	92.8	80.0	120	----
tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	102	80.0	120	----
uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	102	80.0	120	----
vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	98.9	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	93.8	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: 415914)										
VA22A3031-001	BA2206-A-1	mercury, TCLP	7439-97-6	E512	0.0009 mg/L	0.001 mg/L	94.0	50.0	140	----
TCLP Metals (QCLot: 415915)										
VA22A3031-001	BA2206-A-1	antimony, TCLP	7440-36-0	E444	5.3 mg/L	5 mg/L	105	50.0	140	----
		arsenic, TCLP	7440-38-2	E444	4.7 mg/L	5 mg/L	94.7	50.0	140	----
		barium, TCLP	7440-39-3	E444	11.6 mg/L	12.5 mg/L	92.4	50.0	140	----
		beryllium, TCLP	7440-41-7	E444	0.246 mg/L	0.25 mg/L	98.3	50.0	140	----
		boron, TCLP	7440-42-8	E444	10.3 mg/L	10 mg/L	103	50.0	140	----
		cadmium, TCLP	7440-43-9	E444	0.239 mg/L	0.25 mg/L	95.6	50.0	140	----
		calcium, TCLP	7440-70-2	E444	ND mg/L	250 mg/L	ND	50.0	140	----
		chromium, TCLP	7440-47-3	E444	1.17 mg/L	1.25 mg/L	93.9	50.0	140	----
		cobalt, TCLP	7440-48-4	E444	ND mg/L	0.25 mg/L	ND	50.0	140	----
		copper, TCLP	7440-50-8	E444	2.26 mg/L	2.5 mg/L	90.5	50.0	140	----
		iron, TCLP	7439-89-6	E444	234 mg/L	250 mg/L	93.7	50.0	140	----
		lead, TCLP	7439-92-1	E444	9.26 mg/L	10 mg/L	92.6	50.0	140	----
		magnesium, TCLP	7439-95-4	E444	257 mg/L	250 mg/L	103	50.0	140	----
		nickel, TCLP	7440-02-0	E444	2.35 mg/L	2.5 mg/L	94.0	50.0	140	----
		selenium, TCLP	7782-49-2	E444	4.79 mg/L	5 mg/L	95.7	50.0	140	----
		silver, TCLP	7440-22-4	E444	0.103 mg/L	0.1 mg/L	103	50.0	140	----
		thallium, TCLP	7440-28-0	E444	4.6 mg/L	5 mg/L	92.7	50.0	140	----
		uranium, TCLP	7440-61-1	E444	4.76 mg/L	5 mg/L	95.2	50.0	150	----
		vanadium, TCLP	7440-62-2	E444	0.73 mg/L	0.75 mg/L	98.0	50.0	140	----
		zinc, TCLP	7440-66-6	E444	9.27 mg/L	10 mg/L	92.7	50.0	140	----
		zirconium, TCLP	7440-67-7	E444	8 mg/L	10 mg/L	78.3	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: **Soil/Solid**

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
							Low	High	
Metals (QCLot: 414839)									
QC-414839-003	SCP SS-2	mercury	7439-97-6	E510	0.059 mg/kg	97.4	70.0	130	----
Metals (QCLot: 414840)									
QC-414840-003	SCP SS-2	aluminum	7429-90-5	E440	9817 mg/kg	106	70.0	130	----
QC-414840-003	SCP SS-2	antimony	7440-36-0	E440	3.99 mg/kg	108	70.0	130	----
QC-414840-003	SCP SS-2	arsenic	7440-38-2	E440	3.73 mg/kg	105	70.0	130	----
QC-414840-003	SCP SS-2	barium	7440-39-3	E440	105 mg/kg	104	70.0	130	----
QC-414840-003	SCP SS-2	beryllium	7440-41-7	E440	0.349 mg/kg	102	70.0	130	----
QC-414840-003	SCP SS-2	boron	7440-42-8	E440	8.5 mg/kg	115	40.0	160	----
QC-414840-003	SCP SS-2	cadmium	7440-43-9	E440	0.91 mg/kg	99.5	70.0	130	----
QC-414840-003	SCP SS-2	calcium	7440-70-2	E440	31082 mg/kg	106	70.0	130	----
QC-414840-003	SCP SS-2	chromium	7440-47-3	E440	101 mg/kg	109	70.0	130	----
QC-414840-003	SCP SS-2	cobalt	7440-48-4	E440	6.9 mg/kg	103	70.0	130	----
QC-414840-003	SCP SS-2	copper	7440-50-8	E440	123 mg/kg	102	70.0	130	----
QC-414840-003	SCP SS-2	iron	7439-89-6	E440	23558 mg/kg	107	70.0	130	----
QC-414840-003	SCP SS-2	lead	7439-92-1	E440	267 mg/kg	112	70.0	130	----
QC-414840-003	SCP SS-2	lithium	7439-93-2	E440	9.5 mg/kg	104	70.0	130	----
QC-414840-003	SCP SS-2	magnesium	7439-95-4	E440	5509 mg/kg	105	70.0	130	----
QC-414840-003	SCP SS-2	manganese	7439-96-5	E440	269 mg/kg	109	70.0	130	----
QC-414840-003	SCP SS-2	molybdenum	7439-98-7	E440	1.03 mg/kg	102	70.0	130	----
QC-414840-003	SCP SS-2	nickel	7440-02-0	E440	26.7 mg/kg	105	70.0	130	----
QC-414840-003	SCP SS-2	phosphorus	7723-14-0	E440	752 mg/kg	112	70.0	130	----
QC-414840-003	SCP SS-2	potassium	7440-09-7	E440	1587 mg/kg	109	70.0	130	----
QC-414840-003	SCP SS-2	sodium	7440-23-5	E440	797 mg/kg	104	70.0	130	----
QC-414840-003	SCP SS-2	strontium	7440-24-6	E440	86.1 mg/kg	111	70.0	130	----
QC-414840-003	SCP SS-2	thallium	7440-28-0	E440	0.0786 mg/kg	105	40.0	160	----
QC-414840-003	SCP SS-2	tin	7440-31-5	E440	10.6 mg/kg	106	70.0	130	----
QC-414840-003	SCP SS-2	titanium	7440-32-6	E440	839 mg/kg	111	70.0	130	----
QC-414840-003	SCP SS-2	uranium	7440-61-1	E440	0.52 mg/kg	119	70.0	130	----
QC-414840-003	SCP SS-2	vanadium	7440-62-2	E440	32.7 mg/kg	107	70.0	130	----



Sub-Matrix: Soil/Solid

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
							Low	High	
Metals (QCLot: 414840) - continued									
QC-414840-003	SCP SS-2	zinc	7440-66-6	E440	297 mg/kg	102	70.0	130	----
QC-414840-003	SCP SS-2	zirconium	7440-67-7	E440	5.73 mg/kg	92.6	70.0	130	----
Metals (QCLot: 415707)									
QC-415707-003	SCP SS-2	mercury	7439-97-6	E510	0.059 mg/kg	102	70.0	130	----
Metals (QCLot: 415708)									
QC-415708-003	SCP SS-2	aluminum	7429-90-5	E440	9817 mg/kg	111	70.0	130	----
QC-415708-003	SCP SS-2	antimony	7440-36-0	E440	3.99 mg/kg	109	70.0	130	----
QC-415708-003	SCP SS-2	arsenic	7440-38-2	E440	3.73 mg/kg	103	70.0	130	----
QC-415708-003	SCP SS-2	barium	7440-39-3	E440	105 mg/kg	100.0	70.0	130	----
QC-415708-003	SCP SS-2	beryllium	7440-41-7	E440	0.349 mg/kg	109	70.0	130	----
QC-415708-003	SCP SS-2	boron	7440-42-8	E440	8.5 mg/kg	136	40.0	160	----
QC-415708-003	SCP SS-2	cadmium	7440-43-9	E440	0.91 mg/kg	99.3	70.0	130	----
QC-415708-003	SCP SS-2	calcium	7440-70-2	E440	31082 mg/kg	106	70.0	130	----
QC-415708-003	SCP SS-2	chromium	7440-47-3	E440	101 mg/kg	115	70.0	130	----
QC-415708-003	SCP SS-2	cobalt	7440-48-4	E440	6.9 mg/kg	102	70.0	130	----
QC-415708-003	SCP SS-2	copper	7440-50-8	E440	123 mg/kg	97.2	70.0	130	----
QC-415708-003	SCP SS-2	iron	7439-89-6	E440	23558 mg/kg	106	70.0	130	----
QC-415708-003	SCP SS-2	lead	7439-92-1	E440	267 mg/kg	96.3	70.0	130	----
QC-415708-003	SCP SS-2	lithium	7439-93-2	E440	9.5 mg/kg	108	70.0	130	----
QC-415708-003	SCP SS-2	magnesium	7439-95-4	E440	5509 mg/kg	106	70.0	130	----
QC-415708-003	SCP SS-2	manganese	7439-96-5	E440	269 mg/kg	108	70.0	130	----
QC-415708-003	SCP SS-2	molybdenum	7439-98-7	E440	1.03 mg/kg	104	70.0	130	----
QC-415708-003	SCP SS-2	nickel	7440-02-0	E440	26.7 mg/kg	107	70.0	130	----
QC-415708-003	SCP SS-2	phosphorus	7723-14-0	E440	752 mg/kg	89.5	70.0	130	----
QC-415708-003	SCP SS-2	potassium	7440-09-7	E440	1587 mg/kg	111	70.0	130	----
QC-415708-003	SCP SS-2	sodium	7440-23-5	E440	797 mg/kg	107	70.0	130	----
QC-415708-003	SCP SS-2	strontium	7440-24-6	E440	86.1 mg/kg	102	70.0	130	----
QC-415708-003	SCP SS-2	thallium	7440-28-0	E440	0.0786 mg/kg	102	40.0	160	----
QC-415708-003	SCP SS-2	tin	7440-31-5	E440	10.6 mg/kg	105	70.0	130	----
QC-415708-003	SCP SS-2	titanium	7440-32-6	E440	839 mg/kg	121	70.0	130	----
QC-415708-003	SCP SS-2	uranium	7440-61-1	E440	0.52 mg/kg	114	70.0	130	----
QC-415708-003	SCP SS-2	vanadium	7440-62-2	E440	32.7 mg/kg	110	70.0	130	----

Page : 15 of 15
 Work Order : VA22A3031
 Client : Covanta Burnaby Renewable Energy, ULC
 Project : Weekly Bottom Ash - Suite



Sub-Matrix: **Soil/Solid**

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
							Low	High	
Metals (QCLot: 415708) - continued									
QC-415708-003	SCP SS-2	zinc	7440-66-6	E440	297 mg/kg	101	70.0	130	----
QC-415708-003	SCP SS-2	zirconium	7440-67-7	E440	5.73 mg/kg	88.4	70.0	130	----



Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)		
Company:	Covanta Energy	<input type="checkbox"/> Standard	<input type="checkbox"/> Other	<input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days)		
Contact:	Steve Mckinney / Dan Skrypnik	<input checked="" type="checkbox"/> PDF	<input type="checkbox"/> Excel	<input type="checkbox"/> Digital	<input type="checkbox"/> Fax	
Address:	5150 Riverbend Drive Burnaby BC	Email 1:	smckinney@covanta.com		<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT	
Phone:	604-521-1025	Fax:			<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT	
	<input type="checkbox"/> Yes <input type="checkbox"/> No	Email 2:	rjohnson4@covanta.com		<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT	
		Email 3:	dskrypnik@covanta.com		Analysis Request	
			brent.kirkpatrick@metrovancover.org			
			Sarah.Wellman@metrovancover.org			

Invoice To		Client / Project Information		Please indicate below Filtered, Preserved or both (F, P, F/P)							
Same as Report?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Job #:									
Hardcopy of Invoice with Report?	<input type="checkbox"/> Yes <input type="checkbox"/> No	PO / AFE:	PO# 46693 Weekly Bottom Ash - Suite								
Company:		LSD:	(includes 2:1 pH)								
Contact:		Quote #:									
Address:											
Phone:											
Lab/Work Order #	3031	ALS Contact:		Sampler:							
(lab use only)											

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	MET-TCLP-VA (all metals, Hg)		MOISTURE	Chrome 6	MET-CSR+FULL-VA (all metals)		Number of Containers
					X	X			X	X	
BA2206-A-1		09-Feb-22	9:00	Soil	X	X			X		1
BA2206-A-2		09-Feb-22	9:00	Soil	X	X			X		1
BA2206-A-3		09-Feb-22	9:00	Soil	X	X			X		1
BA2206-A-4		09-Feb-22	9:00	Soil	X	X			X		1
BA2206-A-5		09-Feb-22	9:00	Soil	X	X			X		1
BA2206-A-6		09-Feb-22	9:00	Soil	X	X			X		1
BA2206-A-7		09-Feb-22	9:00	Soil	X	X			X		1
BA2206-A-8		09-Feb-22	9:00	Soil	X	X			X		1
BA2206-A-9		09-Feb-22	9:00	Soil	X	X			X		1
BA2206-A-10		09-Feb-22	9:00	Soil	X	X			X		1
BA2206-A-11		09-Feb-22	9:00	Soil	X	X			X		1
BA2206-A-12		09-Feb-22	9:00	Soil	X	X			X		1

Environmental Division
Vancouver
 Work Order Reference
VA22A3031

 Telephone : +1 604 253 4188

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)			SHIPMENT VERIFICATION (lab use only)				
Released by:	Date (dd-mmm-yy):	Time (hh-mm):	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations:
<i>[Signature]</i>	15-Feb-22	0800				19°/19°C	JW	Feb 17	11:50	Yes / No ? If Yes add SIF
22 AN GENF 20.00 Front										