

## Bottom Ash Data

2021 Week 37

---

The following analytical report represents bottom ash composite results for week 37 of 2021 (September 5, 2021 to September 11, 2021).

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 : **VA21C0069**  
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 0000050390  
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 : 17-Sep-2021 13:00  
Date Analysis Commenced : 18-Sep-2021  
Issue Date : 28-Sep-2021 09:36

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
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia



## General Comments

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

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

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

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

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

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

<: less than.

>: greater than.

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

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

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



## Analytical Results

Sub-Matrix: Soil					Client sample ID	BA2137-A-1	BA2137-A-2	BA2137-A-3	BA2137-A-4	BA2137-A-5
(Matrix: Soil/Solid)					Client sampling date / time	08-Sep-2021 09:00	08-Sep-2021 09:00	08-Sep-2021 09:00	08-Sep-2021 09:00	08-Sep-2021 09:00
Analyte	CAS Number	Method	LOR	Unit	VA21C0069-001	VA21C0069-002	VA21C0069-003	VA21C0069-004	VA21C0069-005	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
moisture	----	E144	0.25	%	20.6	18.6	19.4	19.5	17.7	
pH (1:2 soil:water)	----	E108	0.10	pH units	10.6	10.5	10.1	10.0	10.1	
<b>Metals</b>										
aluminum	7429-90-5	E440	50	mg/kg	30200	31800	28000	32400	39600	
antimony	7440-36-0	E440	0.10	mg/kg	102	119	119	113	96.5	
arsenic	7440-38-2	E440	0.10	mg/kg	24.4	26.9	27.4	22.0	18.9	
barium	7440-39-3	E440	0.50	mg/kg	727	583	370	495	650	
beryllium	7440-41-7	E440	0.10	mg/kg	0.28	0.32	0.30	0.33	0.40	
bismuth	7440-69-9	E440	0.20	mg/kg	6.26	8.34	11.6	6.86	4.99	
boron	7440-42-8	E440	5.0	mg/kg	163	196	156	159	213	
cadmium	7440-43-9	E440	0.020	mg/kg	7.70	16.3	19.7	17.9	18.4	
calcium	7440-70-2	E440	50	mg/kg	124000	129000	136000	125000	118000	
chromium	7440-47-3	E440	0.50	mg/kg	157	138	149	144	183	
cobalt	7440-48-4	E440	0.10	mg/kg	72.6	124	54.6	25.0	53.2	
copper	7440-50-8	E440	0.50	mg/kg	5050	2470	2450	4550	4990	
iron	7439-89-6	E440	50	mg/kg	68000	53200	40000	59100	67800	
lead	7439-92-1	E440	0.50	mg/kg	450	759	1030	527	375	
lithium	7439-93-2	E440	2.0	mg/kg	21.2	35.2	21.8	25.6	19.7	
magnesium	7439-95-4	E440	20	mg/kg	10600	9780	10200	10600	9690	
manganese	7439-96-5	E440	1.0	mg/kg	818	912	786	821	1020	
mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	0.0907	<0.0500	<0.0500	<0.0500	
molybdenum	7439-98-7	E440	0.10	mg/kg	29.9	28.3	34.0	29.4	25.1	
nickel	7440-02-0	E440	0.50	mg/kg	162	158	157	126	277	
phosphorus	7723-14-0	E440	50	mg/kg	11000	11800	12100	10700	12000	
potassium	7440-09-7	E440	100	mg/kg	4300	5310	5080	5390	4800	
selenium	7782-49-2	E440	0.20	mg/kg	0.30	0.35	0.43	0.38	0.32	
silver	7440-22-4	E440	0.10	mg/kg	5.33	5.10	7.06	4.83	5.81	
sodium	7440-23-5	E440	50	mg/kg	13700	14500	14200	15500	15500	
strontium	7440-24-6	E440	0.50	mg/kg	340	323	338	369	324	
sulfur	7704-34-9	E440	1000	mg/kg	9600	11200	12900	11300	10600	



## Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2137-A-1	BA2137-A-2	BA2137-A-3	BA2137-A-4	BA2137-A-5
Client sampling date / time					08-Sep-2021 09:00	08-Sep-2021 09:00	08-Sep-2021 09:00	08-Sep-2021 09:00	08-Sep-2021 09:00	
Analyte	CAS Number	Method	LOR	Unit	VA21C0069-001	VA21C0069-002	VA21C0069-003	VA21C0069-004	VA21C0069-005	
					Result	Result	Result	Result	Result	
<b>Metals</b>										
thallium	7440-28-0	E440	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	
tin	7440-31-5	E440	2.0	mg/kg	162	358	123	152	2610	
titanium	7440-32-6	E440	1.0	mg/kg	618	487	287	615	609	
tungsten	7440-33-7	E440	0.50	mg/kg	11.6	15.1	15.6	16.1	10.6	
uranium	7440-61-1	E440	0.050	mg/kg	2.26	2.34	2.60	2.30	1.86	
vanadium	7440-62-2	E440	0.20	mg/kg	27.9	29.0	26.5	30.0	28.4	
zinc	7440-66-6	E440	2.0	mg/kg	5290	6310	6040	4300	7870	
zirconium	7440-67-7	E440	1.0	mg/kg	<1.0	1.4	1.9	1.6	1.8	
<b>TCLP Metals</b>										
pH, TCLP 1st preliminary	----	EPP444	0.010	pH units	11.6	11.6	11.6	11.5	11.6	
pH, TCLP 2nd preliminary	----	EPP444	0.010	pH units	9.29	6.13	7.76	8.07	8.54	
pH, TCLP extraction fluid initial	----	EPP444	0.010	pH units	2.89	2.89	2.89	2.89	2.89	
pH, TCLP final	----	EPP444	0.010	pH units	6.27	5.83	6.54	6.15	5.81	
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	1.85	1.68	1.89	1.95	1.79	
cadmium, TCLP	7440-43-9	E444	0.050	mg/L	0.154	0.274	0.188	0.153	0.216	
calcium, TCLP	7440-70-2	E444	10	mg/L	2010	1830	1970	2130	1870	
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	0.793	2.28	1.04	1.62	1.68	
copper, TCLP	7440-50-8	E444	0.050	mg/L	1.02	1.59	1.30	0.850	1.47	
iron, TCLP	7439-89-6	E444	5.0	mg/L	<5.0	<5.0	<5.0	<5.0	6.0	
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	126	112	130	128	117	
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	0.47	0.68	0.54	0.54	0.63	
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 (Matrix: Soil/Solid)					Client sample ID	BA2137-A-1	BA2137-A-2	BA2137-A-3	BA2137-A-4	BA2137-A-5
Client sampling date / time					08-Sep-2021 09:00	08-Sep-2021 09:00	08-Sep-2021 09:00	08-Sep-2021 09:00	08-Sep-2021 09:00	08-Sep-2021 09:00
Analyte	CAS Number	Method	LOR	Unit	VA21C0069-001	VA21C0069-002	VA21C0069-003	VA21C0069-004	VA21C0069-005	
					Result	Result	Result	Result	Result	
<b>TCLP Metals</b>										
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	36.4	111	30.4	55.7	95.1	
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 (Matrix: Soil/Solid)					Client sample ID	BA2137-A-6	BA2137-A-7	BA2137-A-8	BA2137-A-9	BA2137-A-10
Client sampling date / time					08-Sep-2021 09:00	08-Sep-2021 09:00	08-Sep-2021 09:00	08-Sep-2021 09:00	08-Sep-2021 09:00	
Analyte	CAS Number	Method	LOR	Unit	VA21C0069-006	VA21C0069-007	VA21C0069-008	VA21C0069-009	VA21C0069-010	
					Result	Result	Result	Result	Result	
<b>Physical Tests</b>										
moisture	----	E144	0.25	%	18.8	21.3	21.5	20.0	21.6	
pH (1:2 soil:water)	----	E108	0.10	pH units	10.2	10.4	10.5	10.6	10.5	
<b>Metals</b>										
aluminum	7429-90-5	E440	50	mg/kg	37900	40000	36300	29100	32200	
antimony	7440-36-0	E440	0.10	mg/kg	127	85.2	82.5	106	115	
arsenic	7440-38-2	E440	0.10	mg/kg	23.7	17.7	19.6	20.1	23.9	
barium	7440-39-3	E440	0.50	mg/kg	689	846	712	683	599	
beryllium	7440-41-7	E440	0.10	mg/kg	0.59	0.32	0.30	0.38	0.35	
bismuth	7440-69-9	E440	0.20	mg/kg	51.8	4.35	4.23	5.31	6.60	
boron	7440-42-8	E440	5.0	mg/kg	169	153	191	159	169	
cadmium	7440-43-9	E440	0.020	mg/kg	25.8	6.35	6.89	7.92	10.4	
calcium	7440-70-2	E440	50	mg/kg	136000	114000	116000	128000	135000	
chromium	7440-47-3	E440	0.50	mg/kg	249	166	128	166	178	
cobalt	7440-48-4	E440	0.10	mg/kg	469	36.3	40.7	112	68.0	
copper	7440-50-8	E440	0.50	mg/kg	9390	1400	2880	2480	4460	
iron	7439-89-6	E440	50	mg/kg	51800	64800	59100	69000	55400	
lead	7439-92-1	E440	0.50	mg/kg	336	272	418	377	432	
lithium	7439-93-2	E440	2.0	mg/kg	166	19.6	19.2	27.2	37.8	
magnesium	7439-95-4	E440	20	mg/kg	13000	9620	11000	11100	11100	
manganese	7439-96-5	E440	1.0	mg/kg	924	793	814	888	946	
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	44.1	26.4	23.7	71.8	34.0	
nickel	7440-02-0	E440	0.50	mg/kg	282	113	158	729	139	
phosphorus	7723-14-0	E440	50	mg/kg	10900	9080	9900	10200	11600	
potassium	7440-09-7	E440	100	mg/kg	5280	4780	4390	5000	5040	
selenium	7782-49-2	E440	0.20	mg/kg	0.35	0.30	0.32	0.30	0.30	
silver	7440-22-4	E440.Ag	0.10	mg/kg	6.25	----	----	----	----	
silver	7440-22-4	E440	0.10	mg/kg	----	4.35	4.35	5.50	5.29	
sodium	7440-23-5	E440	50	mg/kg	16100	14300	14500	15200	15200	
strontium	7440-24-6	E440	0.50	mg/kg	337	308	292	304	340	
sulfur	7704-34-9	E440	1000	mg/kg	11800	8800	8500	10600	12200	



## Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2137-A-6	BA2137-A-7	BA2137-A-8	BA2137-A-9	BA2137-A-10
Client sampling date / time					08-Sep-2021 09:00	08-Sep-2021 09:00	08-Sep-2021 09:00	08-Sep-2021 09:00	08-Sep-2021 09:00	
Analyte	CAS Number	Method	LOR	Unit	VA21C0069-006	VA21C0069-007	VA21C0069-008	VA21C0069-009	VA21C0069-010	
					Result	Result	Result	Result	Result	
<b>Metals</b>										
thallium	7440-28-0	E440	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	
tin	7440-31-5	E440	2.0	mg/kg	112	82.1	66.7	104	127	
titanium	7440-32-6	E440	1.0	mg/kg	586	811	843	520	497	
tungsten	7440-33-7	E440	0.50	mg/kg	20.3	11.4	23.6	11.6	13.0	
uranium	7440-61-1	E440	0.050	mg/kg	2.34	1.90	2.04	2.22	2.50	
vanadium	7440-62-2	E440	0.20	mg/kg	33.7	32.0	29.5	37.4	29.9	
zinc	7440-66-6	E440	2.0	mg/kg	4370	4200	3760	5040	5280	
zirconium	7440-67-7	E440	1.0	mg/kg	1.6	1.1	<1.0	<1.0	1.1	
<b>TCLP Metals</b>										
pH, TCLP 1st preliminary	----	EPP444	0.010	pH units	11.6	11.6	11.6	11.6	11.6	
pH, TCLP 2nd preliminary	----	EPP444	0.010	pH units	8.63	8.67	8.94	9.00	9.15	
pH, TCLP extraction fluid initial	----	EPP444	0.010	pH units	2.89	2.89	2.89	2.89	2.89	
pH, TCLP final	----	EPP444	0.010	pH units	5.96	6.12	6.09	6.24	6.04	
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	1.74	1.91	1.82	2.26	1.86	
cadmium, TCLP	7440-43-9	E444	0.050	mg/L	0.385	0.246	0.122	0.164	0.143	
calcium, TCLP	7440-70-2	E444	10	mg/L	1920	2060	2010	2010	1920	
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	3.19	1.77	1.37	2.65	1.24	
copper, TCLP	7440-50-8	E444	0.050	mg/L	1.44	1.36	1.30	1.20	0.457	
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	0.30	0.89	<0.25	<0.25	
magnesium, TCLP	7439-95-4	E444	2.5	mg/L	124	132	125	127	121	
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	0.45	0.60	0.54	0.38	0.81	
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 (Matrix: Soil/Solid)					Client sample ID	BA2137-A-6	BA2137-A-7	BA2137-A-8	BA2137-A-9	BA2137-A-10
Client sampling date / time					08-Sep-2021 09:00	08-Sep-2021 09:00	08-Sep-2021 09:00	08-Sep-2021 09:00	08-Sep-2021 09:00	08-Sep-2021 09:00
Analyte	CAS Number	Method	LOR	Unit	VA21C0069-006	VA21C0069-007	VA21C0069-008	VA21C0069-009	VA21C0069-010	
					Result	Result	Result	Result	Result	
<b>TCLP Metals</b>										
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	75.5	44.1	79.0	32.2	58.5	
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					Client sample ID	BA2137-A-11	BA2137-A-12	----	----	----
(Matrix: Soil/Solid)					Client sampling date / time	08-Sep-2021 09:00	08-Sep-2021 09:00	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA21C0069-011	VA21C0069-012	-----	-----	-----	
					Result	Result	---	---	---	
<b>Physical Tests</b>										
moisture	----	E144	0.25	%	20.3	20.9	----	----	----	
pH (1:2 soil:water)	----	E108	0.10	pH units	10.5	10.4	----	----	----	
<b>Metals</b>										
aluminum	7429-90-5	E440	50	mg/kg	29500	37000	----	----	----	
antimony	7440-36-0	E440	0.10	mg/kg	157	94.0	----	----	----	
arsenic	7440-38-2	E440	0.10	mg/kg	31.2	22.0	----	----	----	
barium	7440-39-3	E440	0.50	mg/kg	391	682	----	----	----	
beryllium	7440-41-7	E440	0.10	mg/kg	0.33	0.33	----	----	----	
bismuth	7440-69-9	E440	0.20	mg/kg	11.1	4.83	----	----	----	
boron	7440-42-8	E440	5.0	mg/kg	155	146	----	----	----	
cadmium	7440-43-9	E440	0.020	mg/kg	13.6	7.66	----	----	----	
calcium	7440-70-2	E440	50	mg/kg	145000	130000	----	----	----	
chromium	7440-47-3	E440	0.50	mg/kg	133	121	----	----	----	
cobalt	7440-48-4	E440	0.10	mg/kg	94.2	22.0	----	----	----	
copper	7440-50-8	E440	0.50	mg/kg	2210	2080	----	----	----	
iron	7439-89-6	E440	50	mg/kg	38600	38800	----	----	----	
lead	7439-92-1	E440	0.50	mg/kg	511	341	----	----	----	
lithium	7439-93-2	E440	2.0	mg/kg	29.2	30.4	----	----	----	
magnesium	7439-95-4	E440	20	mg/kg	11500	10600	----	----	----	
manganese	7439-96-5	E440	1.0	mg/kg	801	1190	----	----	----	
mercury	7439-97-6	E510	0.0500	mg/kg	0.0880	<0.0500	----	----	----	
molybdenum	7439-98-7	E440	0.10	mg/kg	36.0	27.7	----	----	----	
nickel	7440-02-0	E440	0.50	mg/kg	114	97.2	----	----	----	
phosphorus	7723-14-0	E440	50	mg/kg	12400	12200	----	----	----	
potassium	7440-09-7	E440	100	mg/kg	5510	4970	----	----	----	
selenium	7782-49-2	E440	0.20	mg/kg	0.56	0.35	----	----	----	
silver	7440-22-4	E440	0.10	mg/kg	7.30	4.98	----	----	----	
sodium	7440-23-5	E440	50	mg/kg	14900	15100	----	----	----	
strontium	7440-24-6	E440	0.50	mg/kg	352	319	----	----	----	
sulfur	7704-34-9	E440	1000	mg/kg	13800	10000	----	----	----	
thallium	7440-28-0	E440	0.050	mg/kg	<0.050	<0.050	----	----	----	



## Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	BA2137-A-11	BA2137-A-12	----	----	----
Client sampling date / time					08-Sep-2021 09:00	08-Sep-2021 09:00	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	VA21C0069-011	VA21C0069-012	-----	-----	-----	
					Result	Result	---	---	---	
<b>Metals</b>										
tin	7440-31-5	E440	2.0	mg/kg	130	89.5	----	----	----	
titanium	7440-32-6	E440	1.0	mg/kg	268	458	----	----	----	
tungsten	7440-33-7	E440	0.50	mg/kg	15.4	15.5	----	----	----	
uranium	7440-61-1	E440	0.050	mg/kg	2.55	2.13	----	----	----	
vanadium	7440-62-2	E440	0.20	mg/kg	27.7	28.5	----	----	----	
zinc	7440-66-6	E440	2.0	mg/kg	5130	6380	----	----	----	
zirconium	7440-67-7	E440	1.0	mg/kg	1.8	1.4	----	----	----	
<b>TCLP Metals</b>										
pH, TCLP 1st preliminary	----	EPP444	0.010	pH units	11.6	11.6	----	----	----	
pH, TCLP 2nd preliminary	----	EPP444	0.010	pH units	8.73	8.88	----	----	----	
pH, TCLP extraction fluid initial	----	EPP444	0.010	pH units	2.89	2.89	----	----	----	
pH, TCLP final	----	EPP444	0.010	pH units	6.45	6.08	----	----	----	
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	1.94	1.91	----	----	----	
cadmium, TCLP	7440-43-9	E444	0.050	mg/L	0.176	0.172	----	----	----	
calcium, TCLP	7440-70-2	E444	10	mg/L	2080	1980	----	----	----	
chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	<0.25	----	----	----	
cobalt, TCLP	7440-48-4	E444	0.050	mg/L	0.913	0.844	----	----	----	
copper, TCLP	7440-50-8	E444	0.050	mg/L	1.05	0.902	----	----	----	
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	132	126	----	----	----	
mercury, TCLP	7439-97-6	E512	0.0010	mg/L	<0.0010	<0.0010	----	----	----	
nickel, TCLP	7440-02-0	E444	0.25	mg/L	0.44	0.42	----	----	----	
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 (Matrix: Soil/Solid)					Client sample ID	BA2137-A-11	BA2137-A-12	----	----	----
Client sampling date / time					08-Sep-2021 09:00	08-Sep-2021 09:00	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	VA21C0069-011	VA21C0069-012	-----	-----	-----	
					Result	Result	---	---	---	
<b>TCLP Metals</b>										
vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	<0.15	----	----	----	
zinc, TCLP	7440-66-6	E444	0.50	mg/L	33.0	59.2	----	----	----	
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	: <b>VA21C0069</b>	Page	: 1 of 15
Client	: <b>Covanta Burnaby Renewable Energy, ULC</b>	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	: 17-Sep-2021 13:00
PO	: VANCO 0000050390	Issue Date	: 28-Sep-2021 09:36
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.

## Summary of Outliers

### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

### **Outliers : Analysis Holding Time Compliance (Breaches)**

- No Analysis Holding Time Outliers exist.

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

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

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

Matrix: **Soil/Solid**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Duplicate (DUP) RPDs</b>								
Metals	VA21C0069-001	BA2137-A-1	bismuth	7440-69-9	E440	38.0 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA21C0069-001	BA2137-A-1	cobalt	7440-48-4	E440	130 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA21C0069-001	BA2137-A-1	copper	7440-50-8	E440	50.0 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA21C0069-001	BA2137-A-1	lithium	7439-93-2	E440	100 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA21C0069-001	BA2137-A-1	manganese	7439-96-5	E440	34.1 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA21C0069-001	BA2137-A-1	nickel	7440-02-0	E440	60.9 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	VA21C0069-001	BA2137-A-1	tin	7440-31-5	E440	45.4 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.
Metals	VA21C0069-001	BA2137-A-1	titanium	7440-32-6	E440	59.3 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.
Metals	VA21C0069-001	BA2137-A-1	tungsten	7440-33-7	E440	41.7 % DUP-H	30%	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 Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Metals : High Silver in Soil/Solid by CRC ICPMS</b>											
LDPE bag BA2137-A-6	E440.Ag	08-Sep-2021	27-Sep-2021	----	----		27-Sep-2021	----	19 days		
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
LDPE bag BA2137-A-1	E510	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	16 days	✓	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
LDPE bag BA2137-A-10	E510	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	16 days	✓	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
LDPE bag BA2137-A-11	E510	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	16 days	✓	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
LDPE bag BA2137-A-12	E510	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	16 days	✓	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
LDPE bag BA2137-A-2	E510	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	16 days	✓	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
LDPE bag BA2137-A-3	E510	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	16 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		
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
<b>LDPE bag</b> BA2137-A-4	E510	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	16 days	✔	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
<b>LDPE bag</b> BA2137-A-5	E510	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	16 days	✔	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
<b>LDPE bag</b> BA2137-A-6	E510	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	16 days	✔	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
<b>LDPE bag</b> BA2137-A-7	E510	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	16 days	✔	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
<b>LDPE bag</b> BA2137-A-8	E510	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	16 days	✔	
<b>Metals : Mercury in Soil/Solid by CVAAS</b>											
<b>LDPE bag</b> BA2137-A-9	E510	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	16 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
<b>LDPE bag</b> BA2137-A-1	E440	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	16 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
<b>LDPE bag</b> BA2137-A-10	E440	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	16 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPMS</b>											
<b>LDPE bag</b> BA2137-A-11	E440	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	16 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		
<b>Metals : Metals in Soil/Solid by CRC ICPCS</b>											
<b>LDPE bag</b> BA2137-A-12	E440	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	16 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPCS</b>											
<b>LDPE bag</b> BA2137-A-2	E440	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	16 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPCS</b>											
<b>LDPE bag</b> BA2137-A-3	E440	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	16 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPCS</b>											
<b>LDPE bag</b> BA2137-A-4	E440	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	16 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPCS</b>											
<b>LDPE bag</b> BA2137-A-5	E440	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	16 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPCS</b>											
<b>LDPE bag</b> BA2137-A-6	E440	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	16 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPCS</b>											
<b>LDPE bag</b> BA2137-A-7	E440	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	16 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPCS</b>											
<b>LDPE bag</b> BA2137-A-8	E440	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	16 days	✔	
<b>Metals : Metals in Soil/Solid by CRC ICPCS</b>											
<b>LDPE bag</b> BA2137-A-9	E440	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	16 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	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA2137-A-1	E144	08-Sep-2021	----	----	----		23-Sep-2021	----	----	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA2137-A-10	E144	08-Sep-2021	----	----	----		23-Sep-2021	----	----	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA2137-A-11	E144	08-Sep-2021	----	----	----		23-Sep-2021	----	----	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA2137-A-12	E144	08-Sep-2021	----	----	----		23-Sep-2021	----	----	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA2137-A-2	E144	08-Sep-2021	----	----	----		23-Sep-2021	----	----	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA2137-A-3	E144	08-Sep-2021	----	----	----		23-Sep-2021	----	----	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA2137-A-4	E144	08-Sep-2021	----	----	----		23-Sep-2021	----	----	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA2137-A-5	E144	08-Sep-2021	----	----	----		23-Sep-2021	----	----	
<b>Physical Tests : Moisture Content by Gravimetry</b>										
LDPE bag BA2137-A-6	E144	08-Sep-2021	----	----	----		23-Sep-2021	----	----	



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		
<b>Physical Tests : Moisture Content by Gravimetry</b>											
LDPE bag BA2137-A-7	E144	08-Sep-2021	----	----	----		23-Sep-2021	----	----		
<b>Physical Tests : Moisture Content by Gravimetry</b>											
LDPE bag BA2137-A-8	E144	08-Sep-2021	----	----	----		23-Sep-2021	----	----		
<b>Physical Tests : Moisture Content by Gravimetry</b>											
LDPE bag BA2137-A-9	E144	08-Sep-2021	----	----	----		23-Sep-2021	----	----		
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA2137-A-1	E108	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	30 days	16 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA2137-A-10	E108	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	30 days	16 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA2137-A-11	E108	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	30 days	16 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA2137-A-12	E108	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	30 days	16 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA2137-A-2	E108	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	30 days	16 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA2137-A-3	E108	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	30 days	16 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		
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA2137-A-4	E108	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	30 days	16 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA2137-A-5	E108	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	30 days	16 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA2137-A-6	E108	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	30 days	16 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA2137-A-7	E108	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	30 days	16 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA2137-A-8	E108	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	30 days	16 days	✔	
<b>Physical Tests : pH by Meter (1:2 Soil:Water Extraction)</b>											
LDPE bag BA2137-A-9	E108	08-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	30 days	16 days	✔	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>											
HDPE - total (lab preserved) BA2137-A-1	E512	18-Sep-2021	----	----	----		20-Sep-2021	----	12 days		
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>											
HDPE - total (lab preserved) BA2137-A-10	E512	18-Sep-2021	----	----	----		20-Sep-2021	----	12 days		
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>											
HDPE - total (lab preserved) BA2137-A-11	E512	18-Sep-2021	----	----	----		20-Sep-2021	----	12 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		
				Rec	Actual			Rec	Actual	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>										
HDPE - total (lab preserved) BA2137-A-12	E512	18-Sep-2021	----	----	----		20-Sep-2021	----	12 days	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>										
HDPE - total (lab preserved) BA2137-A-2	E512	18-Sep-2021	----	----	----		20-Sep-2021	----	12 days	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>										
HDPE - total (lab preserved) BA2137-A-4	E512	18-Sep-2021	----	----	----		20-Sep-2021	----	12 days	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>										
HDPE - total (lab preserved) BA2137-A-5	E512	18-Sep-2021	----	----	----		20-Sep-2021	----	12 days	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>										
HDPE - total (lab preserved) BA2137-A-6	E512	18-Sep-2021	----	----	----		20-Sep-2021	----	12 days	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>										
HDPE - total (lab preserved) BA2137-A-7	E512	18-Sep-2021	----	----	----		20-Sep-2021	----	12 days	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>										
HDPE - total (lab preserved) BA2137-A-8	E512	18-Sep-2021	----	----	----		20-Sep-2021	----	12 days	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>										
HDPE - total (lab preserved) BA2137-A-9	E512	18-Sep-2021	----	----	----		20-Sep-2021	----	12 days	
<b>TCLP Metals : Mercury by CVAAS (TCLP)</b>										
HDPE - total (lab preserved) BA2137-A-3	E512	20-Sep-2021	----	----	----		21-Sep-2021	----	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		
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA2137-A-1	E444	18-Sep-2021	----	----	----		20-Sep-2021	180 days	12 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA2137-A-10	E444	18-Sep-2021	----	----	----		20-Sep-2021	180 days	12 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA2137-A-11	E444	18-Sep-2021	----	----	----		20-Sep-2021	180 days	12 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA2137-A-12	E444	18-Sep-2021	----	----	----		20-Sep-2021	180 days	12 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA2137-A-2	E444	18-Sep-2021	----	----	----		20-Sep-2021	180 days	12 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA2137-A-4	E444	18-Sep-2021	----	----	----		20-Sep-2021	180 days	12 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA2137-A-5	E444	18-Sep-2021	----	----	----		20-Sep-2021	180 days	12 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA2137-A-6	E444	18-Sep-2021	----	----	----		20-Sep-2021	180 days	12 days	✔	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>											
HDPE - total (lab preserved) BA2137-A-7	E444	18-Sep-2021	----	----	----		20-Sep-2021	180 days	12 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	
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>										
<b>HDPE - total (lab preserved)</b> BA2137-A-8	E444	18-Sep-2021	----	----	----		20-Sep-2021	180 days	12 days	✓
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>										
<b>HDPE - total (lab preserved)</b> BA2137-A-9	E444	18-Sep-2021	----	----	----		20-Sep-2021	180 days	12 days	✓
<b>TCLP Metals : Metals by CRC ICPMS (TCLP)</b>										
<b>HDPE - total (lab preserved)</b> BA2137-A-3	E444	20-Sep-2021	----	----	----		21-Sep-2021	180 days	13 days	✓
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>										
<b>Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg)</b> BA2137-A-1	EPP444	08-Sep-2021	18-Sep-2021	----	----		----	----	----	
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>										
<b>Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg)</b> BA2137-A-10	EPP444	08-Sep-2021	18-Sep-2021	----	----		----	----	----	
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>										
<b>Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg)</b> BA2137-A-11	EPP444	08-Sep-2021	18-Sep-2021	----	----		----	----	----	
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>										
<b>Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg)</b> BA2137-A-12	EPP444	08-Sep-2021	18-Sep-2021	----	----		----	----	----	
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>										
<b>Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg)</b> BA2137-A-2	EPP444	08-Sep-2021	18-Sep-2021	----	----		----	----	----	
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>										
<b>Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg)</b> BA2137-A-3	EPP444	08-Sep-2021	20-Sep-2021	----	----		----	----	----	



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		
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>											
<b>Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg)</b> BA2137-A-4	EPP444	08-Sep-2021	18-Sep-2021	----	----		----	----	----		
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>											
<b>Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg)</b> BA2137-A-5	EPP444	08-Sep-2021	18-Sep-2021	----	----		----	----	----		
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>											
<b>Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg)</b> BA2137-A-6	EPP444	08-Sep-2021	18-Sep-2021	----	----		----	----	----		
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>											
<b>Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg)</b> BA2137-A-7	EPP444	08-Sep-2021	18-Sep-2021	----	----		----	----	----		
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>											
<b>Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg)</b> BA2137-A-8	EPP444	08-Sep-2021	18-Sep-2021	----	----		----	----	----		
<b>TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)</b>											
<b>Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg)</b> BA2137-A-9	EPP444	08-Sep-2021	18-Sep-2021	----	----		----	----	----		

**Legend & Qualifier Definitions**

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





## Quality Control Parameter Frequency Compliance

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

Matrix: **Soil/Solid**

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

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Mercury in Soil/Solid by CVAAS	E510	300700	1	19	5.2	5.0	✔
Metals in Soil/Solid by CRC ICPMS	E440	300701	1	19	5.2	5.0	✔
Moisture Content by Gravimetry	E144	300704	1	12	8.3	5.0	✔
pH by Meter (1:2 Soil:Water Extraction)	E108	300703	1	19	5.2	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
High Silver in Soil/Solid by CRC ICPMS	E440.Ag	303758	1	1	100.0	5.0	✔
Mercury in Soil/Solid by CVAAS	E510	300700	2	19	10.5	10.0	✔
Metals in Soil/Solid by CRC ICPMS	E440	300701	2	19	10.5	10.0	✔
Moisture Content by Gravimetry	E144	300704	1	12	8.3	5.0	✔
pH by Meter (1:2 Soil:Water Extraction)	E108	300703	1	19	5.2	5.0	✔
<b>Method Blanks (MB)</b>							
High Silver in Soil/Solid by CRC ICPMS	E440.Ag	303758	1	1	100.0	5.0	✔
Mercury by CVAAS (TCLP)	E512	297286	2	12	16.6	5.0	✔
Mercury in Soil/Solid by CVAAS	E510	300700	1	19	5.2	5.0	✔
Metals by CRC ICPMS (TCLP)	E444	297896	2	12	16.6	5.0	✔
Metals in Soil/Solid by CRC ICPMS	E440	300701	1	19	5.2	5.0	✔
Moisture Content by Gravimetry	E144	300704	1	12	8.3	5.0	✔
<b>Matrix Spikes (MS)</b>							
Mercury by CVAAS (TCLP)	E512	297286	2	12	16.6	5.0	✔
Metals by CRC ICPMS (TCLP)	E444	297896	2	12	16.6	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 ± 5°C), and is carried out in accordance with procedures described in the BC Lab Manual (prescriptive method). The procedure involves mixing the dried (at <60 °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 <sub>3</sub> 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.
High Silver in Soil/Solid by CRC ICPMS	E440.Ag  Vancouver - Environmental	Soil/Solid	EPA 6020B (mod)	Samples are sieved through a 2 mm sieve, and digested with HNO <sub>3</sub> and HCl. This method is intended to liberate metals that may be environmentally available. Silicate minerals are not solubilized. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. 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 <sub>3</sub> 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



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
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°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 <sub>3</sub> and HCl. This method is intended to liberate metals that may be environmentally available.
Digestion for Silver	EP440.Ag  Vancouver - Environmental	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO <sub>3</sub> and HCl. This method is intended to liberate metals that may be environmentally available.
TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)	EPP444  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 : **VA21C0069**

Page : 1 of 13

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 0000050390  
 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 : 17-Sep-2021 13:00  
 Date Analysis Commenced : 18-Sep-2021  
 Issue Date : 28-Sep-2021 09:36

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.

Signatories	Position	Laboratory Department
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia

Page : 2 of 13  
Work Order : VA21C0069  
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.



### Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Soil/Solid

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 300703)</b>											
VA21C0069-001	BA2137-A-1	pH (1:2 soil:water)	----	E108	0.10	pH units	10.6	10.4	1.4%	5%	----
<b>Physical Tests (QC Lot: 300704)</b>											
VA21C0069-001	BA2137-A-1	moisture	----	E144	0.25	%	20.6	19.4	6.11%	20%	----
<b>Metals (QC Lot: 300700)</b>											
VA21C0069-001	BA2137-A-1	mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	0	Diff <2x LOR	----
<b>Metals (QC Lot: 300701)</b>											
VA21C0069-001	BA2137-A-1	aluminum	7429-90-5	E440	50	mg/kg	30200	40000	27.8%	40%	----
		antimony	7440-36-0	E440	0.10	mg/kg	102	108	5.27%	30%	----
		arsenic	7440-38-2	E440	0.10	mg/kg	24.4	18.3	28.3%	30%	----
		barium	7440-39-3	E440	0.50	mg/kg	727	664	9.15%	40%	----
		beryllium	7440-41-7	E440	0.10	mg/kg	0.28	0.35	0.07	Diff <2x LOR	----
		bismuth	7440-69-9	E440	0.20	mg/kg	6.26	4.26	38.0%	30%	DUP-H
		boron	7440-42-8	E440	5.0	mg/kg	163	179	9.25%	30%	----
		cadmium	7440-43-9	E440	0.020	mg/kg	7.70	6.16	22.3%	30%	----
		calcium	7440-70-2	E440	50	mg/kg	124000	117000	5.37%	30%	----
		chromium	7440-47-3	E440	0.50	mg/kg	157	158	1.03%	30%	----
		cobalt	7440-48-4	E440	0.10	mg/kg	72.6	340	130%	30%	DUP-H
		copper	7440-50-8	E440	0.50	mg/kg	5050	3030	50.0%	30%	DUP-H
		iron	7439-89-6	E440	50	mg/kg	68000	53500	23.8%	30%	----
		lead	7439-92-1	E440	0.50	mg/kg	450	334	29.5%	40%	----
		lithium	7439-93-2	E440	2.0	mg/kg	21.2	63.7	100%	30%	DUP-H
		magnesium	7439-95-4	E440	20	mg/kg	10600	12000	12.4%	30%	----
		manganese	7439-96-5	E440	1.0	mg/kg	818	1150	34.1%	30%	DUP-H
		molybdenum	7439-98-7	E440	0.10	mg/kg	29.9	36.1	18.8%	40%	----
		nickel	7440-02-0	E440	0.50	mg/kg	162	304	60.9%	30%	DUP-H
		phosphorus	7723-14-0	E440	50	mg/kg	11000	10600	3.98%	30%	----
		potassium	7440-09-7	E440	100	mg/kg	4300	4950	14.2%	40%	----
		selenium	7782-49-2	E440	0.20	mg/kg	0.30	0.25	0.04	Diff <2x LOR	----
		silver	7440-22-4	E440	0.10	mg/kg	5.33	5.05	5.48%	40%	----
		sodium	7440-23-5	E440	50	mg/kg	13700	15600	13.1%	40%	----
		strontium	7440-24-6	E440	0.50	mg/kg	340	343	0.845%	40%	----



Sub-Matrix: **Soil/Solid**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Metals (QC Lot: 300701) - continued</b>											
VA21C0069-001	BA2137-A-1	sulfur	7704-34-9	E440	1000	mg/kg	9600	8900	7.64%	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	162	102	45.4%	40%	DUP-H
		titanium	7440-32-6	E440	1.0	mg/kg	618	1140	59.3%	40%	DUP-H
		tungsten	7440-33-7	E440	0.50	mg/kg	11.6	17.7	41.7%	30%	DUP-H
		uranium	7440-61-1	E440	0.050	mg/kg	2.26	2.17	3.99%	30%	----
		vanadium	7440-62-2	E440	0.20	mg/kg	27.9	31.0	10.5%	30%	----
		zinc	7440-66-6	E440	2.0	mg/kg	5290	4860	8.59%	30%	----
		zirconium	7440-67-7	E440	1.0	mg/kg	<1.0	2.0	1.0	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
<b>Physical Tests (QCLot: 300704)</b>						
moisture	----	E144	0.25	%	<0.25	----
<b>Metals (QCLot: 300700)</b>						
mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
<b>Metals (QCLot: 300701)</b>						
aluminum	7429-90-5	E440	50	mg/kg	<50	----
antimony	7440-36-0	E440	0.1	mg/kg	<0.10	----
arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	----
barium	7440-39-3	E440	0.5	mg/kg	<0.50	----
beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	----
bismuth	7440-69-9	E440	0.2	mg/kg	<0.20	----
boron	7440-42-8	E440	5	mg/kg	<5.0	----
cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	----
calcium	7440-70-2	E440	50	mg/kg	<50	----
chromium	7440-47-3	E440	0.5	mg/kg	<0.50	----
cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	----
copper	7440-50-8	E440	0.5	mg/kg	<0.50	----
iron	7439-89-6	E440	50	mg/kg	<50	----
lead	7439-92-1	E440	0.5	mg/kg	<0.50	----
lithium	7439-93-2	E440	2	mg/kg	<2.0	----
magnesium	7439-95-4	E440	20	mg/kg	<20	----
manganese	7439-96-5	E440	1	mg/kg	<1.0	----
molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	----
nickel	7440-02-0	E440	0.5	mg/kg	<0.50	----
phosphorus	7723-14-0	E440	50	mg/kg	<50	----
potassium	7440-09-7	E440	100	mg/kg	<100	----
selenium	7782-49-2	E440	0.2	mg/kg	<0.20	----
silver	7440-22-4	E440	0.1	mg/kg	<0.10	----
sodium	7440-23-5	E440	50	mg/kg	<50	----
strontium	7440-24-6	E440	0.5	mg/kg	<0.50	----
sulfur	7704-34-9	E440	1000	mg/kg	<1000	----
thallium	7440-28-0	E440	0.05	mg/kg	<0.050	----
tin	7440-31-5	E440	2	mg/kg	<2.0	----
titanium	7440-32-6	E440	1	mg/kg	<1.0	----





Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Metals (QCLot: 300701) - continued</b>						
tungsten	7440-33-7	E440	0.5	mg/kg	<0.50	---
uranium	7440-61-1	E440	0.05	mg/kg	<0.050	---
vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	---
zinc	7440-66-6	E440	2	mg/kg	<2.0	---
zirconium	7440-67-7	E440	1	mg/kg	<1.0	---
<b>Metals (QCLot: 303758)</b>						
silver	7440-22-4	E440.Ag	0.1	mg/kg	<0.10	---
<b>TCLP Metals (QCLot: 297286)</b>						
mercury, TCLP	7439-97-6	E512	0.001	mg/L	<0.0010	---
<b>TCLP Metals (QCLot: 297287)</b>						
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	---
<b>TCLP Metals (QCLot: 297895)</b>						
mercury, TCLP	7439-97-6	E512	0.001	mg/L	<0.0010	---
<b>TCLP Metals (QCLot: 297896)</b>						
antimony, TCLP	7440-36-0	E444	1	mg/L	<1.0	---
arsenic, TCLP	7440-38-2	E444	1	mg/L	<1.0	---



Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>TCLP Metals (QCLot: 297896) - continued</b>						
barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	----
beryllium, TCLP	7440-41-7	E444	0.025	mg/L	<0.025	----
boron, TCLP	7440-42-8	E444	0.5	mg/L	<0.50	----
cadmium, TCLP	7440-43-9	E444	0.05	mg/L	<0.050	----
calcium, TCLP	7440-70-2	E444	10	mg/L	<10	----
chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	----
cobalt, TCLP	7440-48-4	E444	0.05	mg/L	<0.050	----
copper, TCLP	7440-50-8	E444	0.05	mg/L	<0.050	----
iron, TCLP	7439-89-6	E444	5	mg/L	<5.0	----
lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	----
magnesium, TCLP	7439-95-4	E444	2.5	mg/L	<2.5	----
nickel, TCLP	7440-02-0	E444	0.25	mg/L	<0.25	----
selenium, TCLP	7782-49-2	E444	0.1	mg/L	<0.10	----
silver, TCLP	7440-22-4	E444	0.05	mg/L	<0.050	----
thallium, TCLP	7440-28-0	E444	1	mg/L	<1.0	----
uranium, TCLP	7440-61-1	E444	0.2	mg/L	<0.20	----
vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	----
zinc, TCLP	7440-66-6	E444	0.5	mg/L	<0.50	----
zirconium, TCLP	7440-67-7	E444	10	mg/L	<10	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 300703)</b>									
pH (1:2 soil:water)	----	E108	----	pH units	6 pH units	99.7	95.0	105	----
<b>Physical Tests (QCLot: 300704)</b>									
moisture	----	E144	0.25	%	50 %	98.4	90.0	110	----
<b>Metals (QCLot: 300700)</b>									
mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	97.7	80.0	120	----
<b>Metals (QCLot: 300701)</b>									
aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	96.2	80.0	120	----
antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	107	80.0	120	----
arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	99.8	80.0	120	----
barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	98.9	80.0	120	----
beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	94.0	80.0	120	----
bismuth	7440-69-9	E440	0.2	mg/kg	100 mg/kg	101	80.0	120	----
boron	7440-42-8	E440	5	mg/kg	100 mg/kg	91.2	80.0	120	----
cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	96.9	80.0	120	----
calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	95.5	80.0	120	----
chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	98.5	80.0	120	----
cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	97.6	80.0	120	----
copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	95.5	80.0	120	----
iron	7439-89-6	E440	50	mg/kg	100 mg/kg	92.8	80.0	120	----
lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	99.5	80.0	120	----
lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	91.1	80.0	120	----
magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	93.8	80.0	120	----
manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	97.1	80.0	120	----
molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	98.8	80.0	120	----
nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	94.2	80.0	120	----
phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	103	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	97.5	80.0	120	----
silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	95.1	80.0	120	----
sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	97.9	80.0	120	----
strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	101	80.0	120	----
sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	97.8	80.0	120	----
thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	102	80.0	120	----



Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery (%)	Recovery Limits (%)		
					LCS	Low	High		
<b>Metals (QCLot: 300701) - continued</b>									
tin	7440-31-5	E440	2	mg/kg	50 mg/kg	96.4	80.0	120	----
titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	93.1	80.0	120	----
tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	96.1	80.0	120	----
uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	96.5	80.0	120	----
vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	99.0	80.0	120	----
zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	100	80.0	120	----
zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	96.0	80.0	120	----
<b>Metals (QCLot: 303758)</b>									
silver	7440-22-4	E440.Ag	0.1	mg/kg	10 mg/kg	96.4	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  $\geq 1x$  spike level.

Sub-Matrix: **Soil/Solid**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
<b>TCLP Metals (QCLot: 297286)</b>										
VA21C0069-001	BA2137-A-1	mercury, TCLP	7439-97-6	E512	0.0010 mg/L	0.001 mg/L	106	50.0	140	----
<b>TCLP Metals (QCLot: 297287)</b>										
VA21C0069-001	BA2137-A-1	antimony, TCLP	7440-36-0	E444	5.4 mg/L	5 mg/L	107	50.0	140	----
		arsenic, TCLP	7440-38-2	E444	4.8 mg/L	5 mg/L	96.5	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	0.241 mg/L	0.25 mg/L	96.4	50.0	140	----
		boron, TCLP	7440-42-8	E444	9.56 mg/L	10 mg/L	95.6	50.0	140	----
		cadmium, TCLP	7440-43-9	E444	0.244 mg/L	0.25 mg/L	97.6	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	1.22 mg/L	1.25 mg/L	97.5	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	2.33 mg/L	2.5 mg/L	93.2	50.0	140	----
		iron, TCLP	7439-89-6	E444	240 mg/L	250 mg/L	96.0	50.0	140	----
		lead, TCLP	7439-92-1	E444	10.6 mg/L	10 mg/L	106	50.0	140	----
		magnesium, TCLP	7439-95-4	E444	227 mg/L	250 mg/L	90.9	50.0	140	----
		nickel, TCLP	7440-02-0	E444	2.37 mg/L	2.5 mg/L	95.0	50.0	140	----
		selenium, TCLP	7782-49-2	E444	5.01 mg/L	5 mg/L	100	50.0	140	----
		silver, TCLP	7440-22-4	E444	0.107 mg/L	0.1 mg/L	107	50.0	140	----
		thallium, TCLP	7440-28-0	E444	5.1 mg/L	5 mg/L	103	50.0	140	----
		uranium, TCLP	7440-61-1	E444	5.35 mg/L	5 mg/L	107	50.0	150	----
		vanadium, TCLP	7440-62-2	E444	0.74 mg/L	0.75 mg/L	98.8	50.0	140	----
		zinc, TCLP	7440-66-6	E444	ND mg/L	10 mg/L	ND	50.0	140	----
		zirconium, TCLP	7440-67-7	E444	10 mg/L	10 mg/L	96.5	50.0	150	----
<b>TCLP Metals (QCLot: 297895)</b>										
VA21C0069-003	BA2137-A-3	mercury, TCLP	7439-97-6	E512	0.0010 mg/L	0.001 mg/L	98.3	50.0	140	----
<b>TCLP Metals (QCLot: 297896)</b>										
VA21C0069-003	BA2137-A-3	antimony, TCLP	7440-36-0	E444	5.2 mg/L	5 mg/L	104	50.0	140	----
		arsenic, TCLP	7440-38-2	E444	5.0 mg/L	5 mg/L	99.6	50.0	140	----
		barium, TCLP	7440-39-3	E444	12.8 mg/L	12.5 mg/L	102	50.0	140	----
		beryllium, TCLP	7440-41-7	E444	0.242 mg/L	0.25 mg/L	96.6	50.0	140	----
		boron, TCLP	7440-42-8	E444	9.80 mg/L	10 mg/L	98.0	50.0	140	----



Sub-Matrix: **Soil/Solid**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>TCLP Metals (QCLot: 297896) - continued</b>										
VA21C0069-003	BA2137-A-3	cadmium, TCLP	7440-43-9	E444	0.248 mg/L	0.25 mg/L	99.4	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	1.23 mg/L	1.25 mg/L	98.7	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	2.43 mg/L	2.5 mg/L	97.1	50.0	140	----
		iron, TCLP	7439-89-6	E444	245 mg/L	250 mg/L	98.1	50.0	140	----
		lead, TCLP	7439-92-1	E444	10.1 mg/L	10 mg/L	101	50.0	140	----
		magnesium, TCLP	7439-95-4	E444	243 mg/L	250 mg/L	97.3	50.0	140	----
		nickel, TCLP	7440-02-0	E444	2.44 mg/L	2.5 mg/L	97.8	50.0	140	----
		selenium, TCLP	7782-49-2	E444	4.84 mg/L	5 mg/L	96.9	50.0	140	----
		silver, TCLP	7440-22-4	E444	0.113 mg/L	0.1 mg/L	113	50.0	140	----
		thallium, TCLP	7440-28-0	E444	4.9 mg/L	5 mg/L	98.4	50.0	140	----
		uranium, TCLP	7440-61-1	E444	4.77 mg/L	5 mg/L	95.4	50.0	150	----
		vanadium, TCLP	7440-62-2	E444	0.76 mg/L	0.75 mg/L	101	50.0	140	----
		zinc, TCLP	7440-66-6	E444	ND mg/L	10 mg/L	ND	50.0	140	----
		zirconium, TCLP	7440-67-7	E444	9 mg/L	10 mg/L	92.7	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	
<b>Metals (QCLot: 300700)</b>									
QC-300700-003	SCP SS-2	mercury	7439-97-6	E510	0.059 mg/kg	92.8	70.0	130	----
<b>Metals (QCLot: 300701)</b>									
QC-300701-003	SCP SS-2	aluminum	7429-90-5	E440	9817 mg/kg	107	70.0	130	----
QC-300701-003	SCP SS-2	antimony	7440-36-0	E440	3.99 mg/kg	103	70.0	130	----
QC-300701-003	SCP SS-2	arsenic	7440-38-2	E440	3.73 mg/kg	109	70.0	130	----
QC-300701-003	SCP SS-2	barium	7440-39-3	E440	105 mg/kg	103	70.0	130	----
QC-300701-003	SCP SS-2	beryllium	7440-41-7	E440	0.349 mg/kg	107	70.0	130	----
QC-300701-003	SCP SS-2	boron	7440-42-8	E440	8.5 mg/kg	128	40.0	160	----
QC-300701-003	SCP SS-2	cadmium	7440-43-9	E440	0.91 mg/kg	101	70.0	130	----
QC-300701-003	SCP SS-2	calcium	7440-70-2	E440	31082 mg/kg	108	70.0	130	----
QC-300701-003	SCP SS-2	chromium	7440-47-3	E440	101 mg/kg	112	70.0	130	----
QC-300701-003	SCP SS-2	cobalt	7440-48-4	E440	6.9 mg/kg	104	70.0	130	----
QC-300701-003	SCP SS-2	copper	7440-50-8	E440	123 mg/kg	104	70.0	130	----
QC-300701-003	SCP SS-2	iron	7439-89-6	E440	23558 mg/kg	104	70.0	130	----
QC-300701-003	SCP SS-2	lead	7439-92-1	E440	267 mg/kg	105	70.0	130	----
QC-300701-003	SCP SS-2	lithium	7439-93-2	E440	9.5 mg/kg	109	70.0	130	----
QC-300701-003	SCP SS-2	magnesium	7439-95-4	E440	5509 mg/kg	102	70.0	130	----
QC-300701-003	SCP SS-2	manganese	7439-96-5	E440	269 mg/kg	109	70.0	130	----
QC-300701-003	SCP SS-2	molybdenum	7439-98-7	E440	1.03 mg/kg	106	70.0	130	----
QC-300701-003	SCP SS-2	nickel	7440-02-0	E440	26.7 mg/kg	101	70.0	130	----
QC-300701-003	SCP SS-2	phosphorus	7723-14-0	E440	752 mg/kg	95.2	70.0	130	----
QC-300701-003	SCP SS-2	potassium	7440-09-7	E440	1587 mg/kg	116	70.0	130	----
QC-300701-003	SCP SS-2	sodium	7440-23-5	E440	797 mg/kg	106	70.0	130	----
QC-300701-003	SCP SS-2	strontium	7440-24-6	E440	86.1 mg/kg	106	70.0	130	----
QC-300701-003	SCP SS-2	thallium	7440-28-0	E440	0.0786 mg/kg	102	40.0	160	----
QC-300701-003	SCP SS-2	tin	7440-31-5	E440	10.6 mg/kg	103	70.0	130	----
QC-300701-003	SCP SS-2	titanium	7440-32-6	E440	839 mg/kg	122	70.0	130	----
QC-300701-003	SCP SS-2	uranium	7440-61-1	E440	0.52 mg/kg	105	70.0	130	----
QC-300701-003	SCP SS-2	vanadium	7440-62-2	E440	32.7 mg/kg	108	70.0	130	----

Page : 13 of 13  
 Work Order : VA21C0069  
 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	
<b>Metals (QCLot: 300701) - continued</b>									
QC-300701-003	SCP SS-2	zinc	7440-66-6	E440	297 mg/kg	106	70.0	130	----
QC-300701-003	SCP SS-2	zirconium	7440-67-7	E440	5.73 mg/kg	99.0	70.0	130	----





ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # \_\_\_\_\_

Page \_\_\_\_ of \_\_\_\_

<b>Report To</b>	<b>Report Format / Distribution</b>	<b>Service Requested</b> (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	<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address: 5150 Riverbend Drive Burnaby BC	Email 1: smckinney@covanta.com	<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Email 2: johnson4@covanta.com	<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Phone: 604-521-1025	Fax: <input type="checkbox"/> Yes <input type="checkbox"/> No	Email 3: dskrypnik@covanta.com
		brent.kirkpatrick@metrovancover.org
		Sarah.Wellman@metrovancover.org

<b>Invoice To</b> Same as Report ?	<b>Client / Project Information</b>
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input type="checkbox"/> No	Job #:
Company:	PO / AFE: PO# 46693 Weekly Bottom Ash - Suite
Contact:	LSD: (includes 2:1 pH)
Address:	
Phone:	Quote #:

Lab Work Order # (lab use only)	ALS Contact:	Sampler:
0069		

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Analysis Request				Number of Containers
					MET-TCLP-VA (all metals, Hg)	MOISTURE	Chrome 6	MET-CSR+FULL-VA (all metals)	
BA2137-A-1		08-Sep-21	9:00	Soil	X	X		X	1
BA2137-A-2		08-Sep-21	9:00	Soil	X	X		X	1
BA2137-A-3		08-Sep-21	9:00	Soil	X	X		X	1
BA2137-A-4		08-Sep-21	9:00	Soil	X	X		X	1
BA2137-A-5		08-Sep-21	9:00	Soil	X	X		X	1
BA2137-A-6		08-Sep-21	9:00	Soil	X	X		X	1
BA2137-A-7		08-Sep-21	9:00	Soil	X	X		X	1
BA2137-A-8		08-Sep-21	9:00	Soil	X	X		X	1
BA2137-A-9		08-Sep-21	9:00	Soil	X	X		X	1
BA2137-A-10		08-Sep-21	9:00	Soil	X	X		X	1
BA2137-A-11		08-Sep-21	9:00	Soil	X	X		X	1
BA2137-A-12		08-Sep-21	9:00	Soil	X	X		X	1

Environmental Division  
Vancouver  
Work Order Reference  
**VA21C0069**

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)			Observations: Yes / No ? If Yes add SIF
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	
	15-Sep-21	0800		Sept 16 21	1:00	28 °C			