Bottom Ash Data

2019 Week 46

The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on November 27, 2019. The data represents bottom ash composite results for week 46 of 2019 (November 10, 2019 to November 16, 2019).

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

Covanta Burnaby R.E., ULC
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5150 Riverbend Drive
Burnaby BC V3N 4V3

Date Received: 19-NOV-19
Report Date: 26-NOV-19 17:54 (MT)
Version: FINAL

Client Phone: 604-521-1025

Certificate of Analysis

Lab Work Order #: L2384542
Project P.O. #: VANCO-0000048466
Job Reference:
C of C Numbers:
Legal Site Desc:

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2384542-1	L2384542-2	L2384542-3	L2384542-4	L2384542-5
Description	Soil	Soil	Soil	Soil	Soil
Sampled Date	13-NOV-19	13-NOV-19	13-NOV-19	13-NOV-19	13-NOV-19
Sampled Time	09:00	09:00	09:00	09:00	09:00
Client ID	BA1946-A-1	BA1946-A-2	BA1946-A-3	BA1946-A-4	BA1946-A-5
Grouping / **Analyte**					
SOIL					
Physical Tests Moisture (%)	21.0	20.3	19.6	21.3	20.4
pH (1:2 soil:water) (pH)	11.54	11.68	11.50	11.57	11.58
Metals Aluminum (Al) (mg/kg)	39200	32700	37000	38500	35500
Antimony (Sb) (mg/kg)	135	128	110	137	110
Arsenic (As) (mg/kg)	41.2	35.8	31.0	46.4	32.7
Barium (Ba) (mg/kg)	546	543	517	590	532
Beryllium (Be) (mg/kg)	0.44	0.71	0.46	0.50	0.46
Bismuth (Bi) (mg/kg)	7.52	8.09	9.61	11.5	8.88
Boron (B) (mg/kg)	364	246	266	255	250
Cadmium (Cd) (mg/kg)	16.0	12.1	44.5	15.8	12.6
Calcium (Ca) (mg/kg)	133000	138000	140000	164000	133000
Chromium (Cr) (mg/kg)	243	183	137	160	153
Cobalt (Co) (mg/kg)	23.8	116	71.2	62.7	24.6
Copper (Cu) (mg/kg)	2320	4910	1620	2340	1420
Iron (Fe) (mg/kg)	86100	88000	73400	73100	68100
Lead (Pb) (mg/kg)	1170	461	389	558	395
Lithium (Li) (mg/kg)	17.4	21.9	18.6	20.5	15.8
Magnesium (Mg) (mg/kg)	11500	11100	12200	13800	10300
Manganese (Mn) (mg/kg)	1160	894	828	901	1230
Mercury (Hg) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
Molybdenum (Mo) (mg/kg)	32.3	44.5	30.8	39.4	35.8
Nickel (Ni) (mg/kg)	146	134	133	222	119
Phosphorus (P) (mg/kg)	10600	10400	11900	13200	11300
Potassium (K) (mg/kg)	4890	5150	5280	6100	5500
Selenium (Se) (mg/kg)	0.43	0.43	0.34	0.42	0.38
Silver (Ag) (mg/kg)	4.95	4.54	4.31	4.88	5.85
Sodium (Na) (mg/kg)	14200	14700	14700	17500	15000
Strontium (Sr) (mg/kg)	278	345	285	343	299
Sulfur (S) (mg/kg)	12900	12900	12900	15100	12900
Thallium (Tl) (mg/kg)	0.061	0.066	0.064	0.070	0.064
Tin (Sn) (mg/kg)	103	118	135	622	113
Titanium (Ti) (mg/kg)	467	464	441	597	611
Tungsten (W) (mg/kg)	10.4	13.6	11.3	11.6	15.1
Uranium (U) (mg/kg)	5.04	5.25	5.10	6.01	4.95
Vanadium (V) (mg/kg)	46.4	52.1	46.1	53.4	47.1
Zinc (Zn) (mg/kg)	4440	4050	3950	4220	5140
Zirconium (Zr) (mg/kg)	1.8	1.4	1.9	1.8	1.5

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2384542-6	L2384542-7	L2384542-8	L2384542-9	L2384542-10
Description	Soil	Soil	Soil	Soil	Soil
Sampled Date	13-NOV-19	13-NOV-19	13-NOV-19	13-NOV-19	13-NOV-19
Sampled Time	09:00	09:00	09:00	09:00	09:00
Client ID	BA1946-A-6	BA1946-A-7	BA1946-A-8	BA1946-A-9	BA1946-A-10
Grouping / **Analyte**					
SOIL					
Physical Tests Moisture (%)	20.5	22.3	22.5	20.0	22.2
pH (1:2 soil:water) (pH)	11.50	11.52	11.46	11.75	11.61
Metals Aluminum (Al) (mg/kg)	38400	41200	44600	39100	37700
Antimony (Sb) (mg/kg)	205	118	121	147	129
Arsenic (As) (mg/kg)	47.6	38.4	30.6	36.6	31.5
Barium (Ba) (mg/kg)	559	603	618	630	566
Beryllium (Be) (mg/kg)	0.43	0.63	0.46	0.51	0.47
Bismuth (Bi) (mg/kg)	21.5	10.2	9.27	22.6	15.9
Boron (B) (mg/kg)	262	229	355	261	248
Cadmium (Cd) (mg/kg)	20.0	13.2	14.0	14.6	16.2
Calcium (Ca) (mg/kg)	147000	140000	142000	159000	150000
Chromium (Cr) (mg/kg)	453	182	173	214	151
Cobalt (Co) (mg/kg)	42.2	48.2	55.4	43.0	67.1
Copper (Cu) (mg/kg)	21700	2320	3130	3860	3310
Iron (Fe) (mg/kg)	75900	81600	102000	85100	49800
Lead (Pb) (mg/kg)	3430	482	1170	1470	834
Lithium (Li) (mg/kg)	18.2	19.9	20.6	20.4	20.2
Magnesium (Mg) (mg/kg)	12000	12600	11700	13800	12000
Manganese (Mn) (mg/kg)	932	917	1040	996	985
Mercury (Hg) (mg/kg)	<0.050	<0.050	<0.050	<0.050	0.219
Molybdenum (Mo) (mg/kg)	43.9	32.4	35.4	49.5	33.9
Nickel (Ni) (mg/kg)	588	135	140	467	188
Phosphorus (P) (mg/kg)	11800	10500	11900	13600	11500
Potassium (K) (mg/kg)	5340	5350	5680	6290	5530
Selenium (Se) (mg/kg)	0.42	0.33	0.41	0.44	0.33
Silver (Ag) (mg/kg)	9.07	4.00	4.25	9.90	4.75
Sodium (Na) (mg/kg)	15100	16800	16300	17200	16200
Strontium (Sr) (mg/kg)	362	301	353	345	337
Sulfur (S) (mg/kg)	15700	12400	14100	15900	13700
Thallium (Tl) (mg/kg)	0.077	0.062	0.081	0.074	0.071
Tin (Sn) (mg/kg)	423	140	200	234	2150
Titanium (Ti) (mg/kg)	580	454	558	390	433
Tungsten (W) (mg/kg)	11.8	9.84	12.4	18.6	11.3
Uranium (U) (mg/kg)	5.76	4.72	5.51	6.21	5.59
Vanadium (V) (mg/kg)	52.8	44.4	54.8	55.7	50.9
Zinc (Zn) (mg/kg)	9390	7890	19100	5550	5910
Zirconium (Zr) (mg/kg)	1.5	1.6	1.9	1.6	1.7

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2384542-11	L2384542-12			
	Description	Soil	Soil			
	Sampled Date	13-NOV-19	13-NOV-19			
	Sampled Time	09:00	09:00			
	Client ID	BA1946-A-11	BA1946-A-12			
Grouping	**Analyte**					
SOIL						
Physical Tests	Moisture (%)	20.2	19.7			
	pH (1:2 soil:water) (pH)	11.97	11.64			
Metals	Aluminum (Al) (mg/kg)	36600	59400			
	Antimony (Sb) (mg/kg)	139	129			
	Arsenic (As) (mg/kg)	54.3	34.9			
	Barium (Ba) (mg/kg)	521	554			
	Beryllium (Be) (mg/kg)	0.48	2.12			
	Bismuth (Bi) (mg/kg)	9.28	8.37			
	Boron (B) (mg/kg)	313	234			
	Cadmium (Cd) (mg/kg)	16.9	14.7			
	Calcium (Ca) (mg/kg)	147000	146000			
	Chromium (Cr) (mg/kg)	183	147			
	Cobalt (Co) (mg/kg)	42.5	86.4			
	Copper (Cu) (mg/kg)	6940	3130			
	Iron (Fe) (mg/kg)	76200	58600			
	Lead (Pb) (mg/kg)	661	498			
	Lithium (Li) (mg/kg)	21.3	177			
	Magnesium (Mg) (mg/kg)	12800	12600			
	Manganese (Mn) (mg/kg)	1240	799			
	Mercury (Hg) (mg/kg)	<0.050	<0.050			
	Molybdenum (Mo) (mg/kg)	47.2	31.6			
	Nickel (Ni) (mg/kg)	180	628			
	Phosphorus (P) (mg/kg)	10500	10700			
	Potassium (K) (mg/kg)	5640	5670			
	Selenium (Se) (mg/kg)	0.42	0.38			
	Silver (Ag) (mg/kg)	8.48	5.58			
	Sodium (Na) (mg/kg)	15800	15400			
	Strontium (Sr) (mg/kg)	303	331			
	Sulfur (S) (mg/kg)	14300	13800			
	Thallium (Tl) (mg/kg)	0.063	0.069			
	Tin (Sn) (mg/kg)	141	146			
	Titanium (Ti) (mg/kg)	476	1160			
	Tungsten (W) (mg/kg)	10.5	12.4			
	Uranium (U) (mg/kg)	5.17	5.33			
	Vanadium (V) (mg/kg)	50.2	51.9			
	Zinc (Zn) (mg/kg)	4680	3960			
	Zirconium (Zr) (mg/kg)	1.7	3.0			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2384542-1	L2384542-2	L2384542-3	L2384542-4	L2384542-5
Description	Soil	Soil	Soil	Soil	Soil
Sampled Date	13-NOV-19	13-NOV-19	13-NOV-19	13-NOV-19	13-NOV-19
Sampled Time	09:00	09:00	09:00	09:00	09:00
Client ID	BA1946-A-1	BA1946-A-2	BA1946-A-3	BA1946-A-4	BA1946-A-5
Grouping / **Analyte**					
SOIL					
TCLP Metals					
1st Preliminary pH (pH)	11.63	11.70	11.67	11.85	11.76
2nd Preliminary pH (pH)	9.48	9.05	8.32	9.14	8.61
Final pH (pH)	6.06	6.17	6.18	6.23	6.20
Extraction Solution Initial pH (pH)	2.92	2.92	2.92	2.92	2.92
Antimony (Sb)-Leachable (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic (As)-Leachable (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
Barium (Ba)-Leachable (mg/L)	<2.5	<2.5	<2.5	<2.5	<2.5
Beryllium (Be)-Leachable (mg/L)	<0.025	<0.025	<0.025	<0.025	<0.025
Boron (B)-Leachable (mg/L)	2.73	2.48	2.21	2.60	2.61
Cadmium (Cd)-Leachable (mg/L)	0.193	0.178	0.301	0.234	0.217
Calcium (Ca)-Leachable (mg/L)	2000	1940	1920	1940	2000
Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25	<0.25	<0.25	<0.25
Cobalt (Co)-Leachable (mg/L)	0.638	0.853	0.562	0.953	0.699
Copper (Cu)-Leachable (mg/L)	0.921	0.916	1.06	0.870	0.648
Iron (Fe)-Leachable (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
Lead (Pb)-Leachable (mg/L)	<0.25	<0.25	<0.25	<0.25	<0.25
Magnesium (Mg)-Leachable (mg/L)	125	124	126	130	130
Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Nickel (Ni)-Leachable (mg/L)	0.41	0.47	0.51	0.38	0.44
Selenium (Se)-Leachable (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
Silver (Ag)-Leachable (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
Thallium (Tl)-Leachable (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
Vanadium (V)-Leachable (mg/L)	<0.15	<0.15	<0.15	<0.15	<0.15
Zinc (Zn)-Leachable (mg/L)	38.7	36.4	34.0	36.8	62.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2384542-6	L2384542-7	L2384542-8	L2384542-9	L2384542-10
Description	Soil	Soil	Soil	Soil	Soil
Sampled Date	13-NOV-19	13-NOV-19	13-NOV-19	13-NOV-19	13-NOV-19
Sampled Time	09:00	09:00	09:00	09:00	09:00
Client ID	BA1946-A-6	BA1946-A-7	BA1946-A-8	BA1946-A-9	BA1946-A-10
Grouping / **Analyte**					
SOIL					
TCLP Metals					
1st Preliminary pH (pH)	11.77	11.86	11.67	11.76	11.84
2nd Preliminary pH (pH)	8.95	8.47	8.55	8.69	9.00
Final pH (pH)	6.09	6.08	6.00	6.09	6.19
Extraction Solution Initial pH (pH)	2.92	2.92	2.92	2.92	2.92
Antimony (Sb)-Leachable (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic (As)-Leachable (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
Barium (Ba)-Leachable (mg/L)	<2.5	<2.5	<2.5	<2.5	<2.5
Beryllium (Be)-Leachable (mg/L)	<0.025	<0.025	<0.025	<0.025	<0.025
Boron (B)-Leachable (mg/L)	2.57	3.91	2.35	2.58	2.56
Cadmium (Cd)-Leachable (mg/L)	0.227	0.187	0.192	0.205	0.193
Calcium (Ca)-Leachable (mg/L)	2020	1880	1940	1960	2090
Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25	<0.25	<0.25	<0.25
Cobalt (Co)-Leachable (mg/L)	0.254	1.16	0.946	0.762	0.859
Copper (Cu)-Leachable (mg/L)	0.735	0.614	1.11	1.37	0.961
Iron (Fe)-Leachable (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
Lead (Pb)-Leachable (mg/L)	<0.25	<0.25	<0.25	<0.25	<0.25
Magnesium (Mg)-Leachable (mg/L)	124	121	127	129	129
Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Nickel (Ni)-Leachable (mg/L)	0.39	0.36	0.43	0.40	0.44
Selenium (Se)-Leachable (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
Silver (Ag)-Leachable (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
Thallium (Tl)-Leachable (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
Vanadium (V)-Leachable (mg/L)	<0.15	<0.15	<0.15	<0.15	<0.15
Zinc (Zn)-Leachable (mg/L)	36.4	42.1	43.5	37.4	33.9

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2384542-11	L2384542-12			
	Description	Soil	Soil			
	Sampled Date	13-NOV-19	13-NOV-19			
	Sampled Time	09:00	09:00			
	Client ID	BA1946-A-11	BA1946-A-12			
Grouping	**Analyte**					
SOIL						
TCLP Metals	1st Preliminary pH (pH)	11.88	11.79			
	2nd Preliminary pH (pH)	8.39	8.06			
	Final pH (pH)	6.06	6.08			
	Extraction Solution Initial pH (pH)	2.92	2.92			
	Antimony (Sb)-Leachable (mg/L)	<1.0	<1.0			
	Arsenic (As)-Leachable (mg/L)	<1.0	<1.0			
	Barium (Ba)-Leachable (mg/L)	<2.5	<2.5			
	Beryllium (Be)-Leachable (mg/L)	<0.025	<0.025			
	Boron (B)-Leachable (mg/L)	2.65	2.43			
	Cadmium (Cd)-Leachable (mg/L)	0.228	0.576			
	Calcium (Ca)-Leachable (mg/L)	1870	1910			
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25			
	Cobalt (Co)-Leachable (mg/L)	0.475	1.19			
	Copper (Cu)-Leachable (mg/L)	0.986	1.39			
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0			
	Lead (Pb)-Leachable (mg/L)	<0.25	<0.25			
	Magnesium (Mg)-Leachable (mg/L)	122	127			
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010			
	Nickel (Ni)-Leachable (mg/L)	0.53	0.49			
	Selenium (Se)-Leachable (mg/L)	<0.10	<0.10			
	Silver (Ag)-Leachable (mg/L)	<0.050	<0.050			
	Thallium (Tl)-Leachable (mg/L)	<1.0	<1.0			
	Vanadium (V)-Leachable (mg/L)	<0.15	<0.15			
	Zinc (Zn)-Leachable (mg/L)	48.0	45.9			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Boron (B)	DUP-H	L2384542-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Chromium (Cr)	DUP-H	L2384542-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Copper (Cu)	DUP-H	L2384542-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Lead (Pb)	DUP-H	L2384542-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Cadmium (Cd)	DUP-H,J	L2384542-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cadmium (Cd)-Leachable	MS-B	L2384542-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2384542-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cobalt (Co)-Leachable	MS-B	L2384542-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Leachable	MS-B	L2384542-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
DUP-H,J	Duplicate results outside ALS DQO, due to sample heterogeneity. Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-200.2-CVAF-VA	Soil	Mercury in Soil by CVAAS	EPA 200.2/1631E (mod)

Soil samples are digested with hot nitric and hydrochloric acids, followed by CVAAS analysis. This method is fully compliant with the BC SALM strong acid leachable metals digestion method.

HG-TCLP-CVAFS-VA Soil Mercury by CVAAS (TCLP) EPA 1311/245.7

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter and analysed using atomic absorption spectrophotometry (EPA 245.7).

MET-200.2-CCMS-VA Soil Metals in Soil by CRC ICPMS EPA 200.2/6020A (mod)

Soil/sediment is dried, disaggregated, and sieved (2 mm). Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

MET-TCLP-CCMS-VA Soil Metals by ICPMS (TCLP) EPA 1311/6020A

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MOISTURE-VA Soil Moisture content CCME PHC in Soil - Tier 1 (mod)

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of two hours.

PH-1:2-VA Soil pH in Soil (1:2 Soil:Water Extraction) BC WLAP METHOD: PH, ELECTROMETRIC, SOIL

This analysis is carried out in accordance with procedures described in "pH, Electrometric in Soil and Sediment - Prescriptive Method", Rev. 2005, Section B Physical, Inorganic and Misc. Constituents, BC Environmental Laboratory Manual. 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. The pH of the solution is then measured using a standard pH probe.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour 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.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

L2384542-COFC

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # _____

Page ____ of ____

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

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

Report Format / Distribution				
☐ Standard	☐ Other			
☑ PDF	☐ Excel	☐ Digital	☐ Fax	
Email 1:	smckinney@covanta.com			
Email 2:	rjohnson4@covanta.com			
Email 3:	dskrypnyk@covanta.com			
	brent.kirkpatrick@metrovancouver.org			
	Sarah.Wellman@metrovancouver.org			

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

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

Service Requested (Rush for routine analysis subject to availability)

- ◉ Regular (Standard Turnaround Times - Business Days)
- ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
- ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
- ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Analysis Request

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

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	MET-TCLP-VA (all metals, Hg)	MOISTURE	Chrome 6	MET-CSR+FULL-VA (all metals)	Number of Containers
	BA1946-A-1	13-Nov-19	9:00	Soil	X	X		X	1
	BA1946-A-2	13-Nov-19	9:00	Soil	X	X		X	1
	BA1946-A-3	13-Nov-19	9:00	Soil	X	X		X	1
	BA1946-A-4	13-Nov-19	9:00	Soil	X	X		X	1
	BA1946-A-5	13-Nov-19	9:00	Soil	X	X		X	1
	BA1946-A-6	13-Nov-19	9:00	Soil	X	X		X	1
	BA1946-A-7	13-Nov-19	9:00	Soil	X	X		X	1
	BA1946-A-8	13-Nov-19	9:00	Soil	X	X		X	1
	BA1946-A-9	13-Nov-19	9:00	Soil	X	X		X	1
	BA1946-A-10	13-Nov-19	9:00	Soil	X	X		X	1
	BA1946-A-11	13-Nov-19	9:00	Soil	X	X		X	1
	BA1946-A-12	13-Nov-19	9:00	Soil	X	X		X	1

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

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

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

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

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
	19-NOV-19	0800	RD	Nov 19, 19	12:25pm	18 °C				

GENF 20.00 Front