

Bottom Ash Data

2019 Week 28

The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on July 23, 2019. The data represents bottom ash composite results for week 28 of 2019 (July 7, 2019 to July 13, 2019).

The bottom ash meets the requirements of Metro Vancouver's Bottom Ash Management Plan and is suitable for beneficial use during Coquitlam Landfill closure works.



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Date Received: 16-JUL-19
Report Date: 23-JUL-19 12:40 (MT)
Version: FINAL

Client Phone: 604-521-1025

Certificate of Analysis

Lab Work Order #: L2310789
Project P.O. #: VANCO-0000048466
Job Reference:
C of C Numbers:
Legal Site Desc: 46693 Weekly Bottom Ash - Suite (includes 2:1 pH)

Brent Mack, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2310789-1	L2310789-2	L2310789-3	L2310789-4	L2310789-5
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	10-JUL-19	10-JUL-19	10-JUL-19	10-JUL-19	10-JUL-19
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1928-A-1	BA1928-A-2	BA1928-A-3	BA1928-A-4	BA1928-A-5
Grouping	Analyte						
SOIL							
Physical Tests	% Moisture (%)		18.6				
	Moisture (%)		17.4	16.2	18.2	17.6	18.1
	pH (1:2 soil:water) (pH)		11.28	11.46	11.38	11.32	11.44
Metals	Aluminum (Al) (mg/kg)		43800	47400	33000	36200	32900
	Antimony (Sb) (mg/kg)		132	120	120	135	113
	Arsenic (As) (mg/kg)		34.8	28.4	28.4	35.7	26.5
	Barium (Ba) (mg/kg)		669	732	639	522	647
	Beryllium (Be) (mg/kg)		0.46	0.37	0.38	15.2	0.38
	Bismuth (Bi) (mg/kg)		4.51	4.72	5.18	5.59	4.27
	Boron (B) (mg/kg)		263	171	216	173	162
	Cadmium (Cd) (mg/kg)		13.3	11.3	12.4	14.0	15.5
	Calcium (Ca) (mg/kg)		140000	120000	122000	123000	115000
	Chromium (Cr) (mg/kg)		188	831	134	168	179
	Cobalt (Co) (mg/kg)		25.3	23.1	41.3	20.1	376
	Copper (Cu) (mg/kg)		6580	2220	6640	6290	2700
	Iron (Fe) (mg/kg)		72700	56400	70500	42100	82200
	Lead (Pb) (mg/kg)		366	505	433	7320	390
	Lithium (Li) (mg/kg)		17.4	15.8	16.2	14.7	50.1
	Magnesium (Mg) (mg/kg)		11600	9440	9860	9620	9500
	Manganese (Mn) (mg/kg)		1450	713	745	617	753
	Mercury (Hg) (mg/kg)		<0.050	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)		33.2	34.8	31.2	26.2	39.9
	Nickel (Ni) (mg/kg)		238	559	122	103	634
	Phosphorus (P) (mg/kg)		12600	10200	9440	10100	9610
	Potassium (K) (mg/kg)		5380	4670	4830	5030	5260
	Selenium (Se) (mg/kg)		0.38	0.45	0.37	0.50	0.34
	Silver (Ag) (mg/kg)		3.49	4.24	3.78	3.80	3.62
	Sodium (Na) (mg/kg)		16200	14700	13800	13500	14500
	Strontium (Sr) (mg/kg)		308	276	290	283	300
	Sulfur (S) (mg/kg)		12800	11000	11700	11900	11000
Thallium (Tl) (mg/kg)		0.063	0.227	0.054	0.091	0.080	
Tin (Sn) (mg/kg)		134	101	144	149	147	
Titanium (Ti) (mg/kg)		842	2110	977	979	834	
Tungsten (W) (mg/kg)		3.16	5.64	3.89	3.41	4.58	
Uranium (U) (mg/kg)		4.49	4.18	3.99	4.71	4.26	
Vanadium (V) (mg/kg)		44.8	41.7	46.8	39.6	38.3	
Zinc (Zn) (mg/kg)		6090	20000	4680	3860	8570	

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2310789-6	L2310789-7	L2310789-8	L2310789-9	L2310789-10
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	10-JUL-19	10-JUL-19	10-JUL-19	10-JUL-19	10-JUL-19
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1928-A-6	BA1928-A-7	BA1928-A-8	BA1928-A-9	BA1928-A-10
Grouping	Analyte						
SOIL							
Physical Tests	% Moisture (%)						
	Moisture (%)		16.7	18.3	17.0	16.7	17.0
	pH (1:2 soil:water) (pH)		11.33	11.36	11.27	11.40	11.60
Metals	Aluminum (Al) (mg/kg)		31500	36100	38400	30000	30300
	Antimony (Sb) (mg/kg)		112	136	141	120	135
	Arsenic (As) (mg/kg)		25.7	53.1	26.8	31.5	36.9
	Barium (Ba) (mg/kg)		595	613	600	662	584
	Beryllium (Be) (mg/kg)		0.34	0.38	0.41	0.64	0.41
	Bismuth (Bi) (mg/kg)		4.51	5.65	4.57	4.27	5.43
	Boron (B) (mg/kg)		179	188	160	235	172
	Cadmium (Cd) (mg/kg)		11.0	15.2	12.1	9.37	14.0
	Calcium (Ca) (mg/kg)		113000	118000	121000	109000	128000
	Chromium (Cr) (mg/kg)		189	154	131	173	145
	Cobalt (Co) (mg/kg)		23.3	49.5	29.4	25.8	155
	Copper (Cu) (mg/kg)		7570	1600	20900	4620	4730
	Iron (Fe) (mg/kg)		82100	74100	66000	73900	60100
	Lead (Pb) (mg/kg)		757	578	2300	355	381
	Lithium (Li) (mg/kg)		15.0	18.4	15.7	13.1	16.5
	Magnesium (Mg) (mg/kg)		9500	10100	9410	9200	10700
	Manganese (Mn) (mg/kg)		753	946	987	687	631
	Mercury (Hg) (mg/kg)		<0.050	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)		27.8	46.7	26.8	31.4	32.3
	Nickel (Ni) (mg/kg)		939	148	127	637	133
	Phosphorus (P) (mg/kg)		8270	9680	10100	9830	11500
	Potassium (K) (mg/kg)		4470	5620	4920	4750	4960
	Selenium (Se) (mg/kg)		0.37	0.37	0.43	0.31	0.40
	Silver (Ag) (mg/kg)		3.66	4.23	4.64	3.43	6.50
	Sodium (Na) (mg/kg)		12500	13400	14300	13100	13300
	Strontium (Sr) (mg/kg)		279	278	289	296	301
	Sulfur (S) (mg/kg)		10400	12400	11900	9700	12900
	Thallium (Tl) (mg/kg)		0.059	0.074	0.058	0.051	0.065
	Tin (Sn) (mg/kg)		158	138	299	96.4	198
	Titanium (Ti) (mg/kg)		1050	737	658	772	723
	Tungsten (W) (mg/kg)		3.77	4.61	3.76	2.82	9.29
	Uranium (U) (mg/kg)		3.82	4.81	4.07	3.81	4.52
	Vanadium (V) (mg/kg)		40.7	47.9	36.7	35.5	39.8
	Zinc (Zn) (mg/kg)		8880	3840	12000	4360	4320

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2310789-11	L2310789-12		
		Description	Soil	Soil		
		Sampled Date	10-JUL-19	10-JUL-19		
		Sampled Time	09:00	09:00		
		Client ID	BA1928-A-11	BA1928-A-12		
Grouping	Analyte					
SOIL						
Physical Tests	% Moisture (%)					
	Moisture (%)		17.5	17.0		
	pH (1:2 soil:water) (pH)		11.36	10.96		
Metals	Aluminum (Al) (mg/kg)		31900	45400		
	Antimony (Sb) (mg/kg)		139	126		
	Arsenic (As) (mg/kg)		28.0	31.5		
	Barium (Ba) (mg/kg)		580	610		
	Beryllium (Be) (mg/kg)		0.46	0.41		
	Bismuth (Bi) (mg/kg)		4.69	5.21		
	Boron (B) (mg/kg)		183	197		
	Cadmium (Cd) (mg/kg)		12.1	12.2		
	Calcium (Ca) (mg/kg)		117000	125000		
	Chromium (Cr) (mg/kg)		158	205		
	Cobalt (Co) (mg/kg)		38.4	29.1		
	Copper (Cu) (mg/kg)		2450	1960		
	Iron (Fe) (mg/kg)		69300	82400		
	Lead (Pb) (mg/kg)		591	1340		
	Lithium (Li) (mg/kg)		16.1	19.4		
	Magnesium (Mg) (mg/kg)		8760	11200		
	Manganese (Mn) (mg/kg)		1160	911		
	Mercury (Hg) (mg/kg)		<0.050	<0.050		
	Molybdenum (Mo) (mg/kg)		35.4	31.1		
	Nickel (Ni) (mg/kg)		105	196		
	Phosphorus (P) (mg/kg)		9210	9990		
	Potassium (K) (mg/kg)		4830	5390		
	Selenium (Se) (mg/kg)		0.32	0.39		
	Silver (Ag) (mg/kg)		3.33	3.18		
	Sodium (Na) (mg/kg)		13300	15300		
	Strontium (Sr) (mg/kg)		266	293		
	Sulfur (S) (mg/kg)		11600	13200		
	Thallium (Tl) (mg/kg)		0.061	0.065		
	Tin (Sn) (mg/kg)		121	126		
	Titanium (Ti) (mg/kg)		1150	1270		
	Tungsten (W) (mg/kg)		4.78	3.04		
	Uranium (U) (mg/kg)		4.36	4.61		
Vanadium (V) (mg/kg)		37.8	41.3			
Zinc (Zn) (mg/kg)		3570	4170			

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2310789-1	L2310789-2	L2310789-3	L2310789-4	L2310789-5
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	10-JUL-19	10-JUL-19	10-JUL-19	10-JUL-19	10-JUL-19
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1928-A-1	BA1928-A-2	BA1928-A-3	BA1928-A-4	BA1928-A-5
Grouping	Analyte						
SOIL							
Metals	Zirconium (Zr) (mg/kg)		1.2	3.7	1.0	1.4	1.1
Speciated Metals	Hexavalent Chromium (mg/kg)		0.14				
TCLP Metals	1st Preliminary pH (pH)		11.57	11.56	11.56	11.55	11.63
	2nd Preliminary pH (pH)		9.81	9.85	9.76	7.91	9.18
	Final pH (pH)		5.63	5.75	6.10	6.17	6.08
	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)		1.80	1.84	1.93	1.87	1.91
	Cadmium (Cd)-Leachable (mg/L)		0.173	0.169	0.171	0.599	0.183
	Calcium (Ca)-Leachable (mg/L)		1690	1840	1940	1870	1860
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.368	0.247	0.490	0.633	0.519
	Copper (Cu)-Leachable (mg/L)		1.46	0.786	0.670	1.14	0.624
	Iron (Fe)-Leachable (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Lead (Pb)-Leachable (mg/L)		3.55	<0.25	0.32	0.26	<0.25
	Magnesium (Mg)-Leachable (mg/L)		111	119	124	132	123
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.49	0.49	0.47	0.57	1.02
	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)		85.9	44.0	36.4	51.1	39.6

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2310789-6	L2310789-7	L2310789-8	L2310789-9	L2310789-10
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	10-JUL-19	10-JUL-19	10-JUL-19	10-JUL-19	10-JUL-19
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1928-A-6	BA1928-A-7	BA1928-A-8	BA1928-A-9	BA1928-A-10
Grouping	Analyte						
SOIL							
Metals	Zirconium (Zr) (mg/kg)		1.2	1.2	1.0	<1.0	<1.0
Speciated Metals	Hexavalent Chromium (mg/kg)						
TCLP Metals	1st Preliminary pH (pH)		11.59	11.60	11.59	11.60	11.65
	2nd Preliminary pH (pH)		9.42	9.09	8.88	8.78	9.05
	Final pH (pH)		6.12	6.07	5.81	6.23	5.71
	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)		1.99	2.11	2.01	2.02	1.85
	Cadmium (Cd)-Leachable (mg/L)		0.233	0.245	0.197	0.160	0.218
	Calcium (Ca)-Leachable (mg/L)		1870	1880	1740	1940	1880
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.508	0.781	0.725	1.57	3.65
	Copper (Cu)-Leachable (mg/L)		0.311	0.674	1.68	0.894	1.15
	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)		116	125	120	128	119
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.57	0.45	0.42	0.49	0.39
	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)		55.1	35.1	71.2	37.9	47.7

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2310789-11	L2310789-12			
		Description	Soil	Soil			
		Sampled Date	10-JUL-19	10-JUL-19			
		Sampled Time	09:00	09:00			
		Client ID	BA1928-A-11	BA1928-A-12			
Grouping	Analyte						
SOIL							
Metals	Zirconium (Zr) (mg/kg)	1.3	1.7				
Speciated Metals	Hexavalent Chromium (mg/kg)						
TCLP Metals	1st Preliminary pH (pH)	11.66	11.64				
	2nd Preliminary pH (pH)	9.35	9.30				
	Final pH (pH)	6.00	5.95				
	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)	2.04	1.74				
	Cadmium (Cd)-Leachable (mg/L)	0.183	0.260				
	Calcium (Ca)-Leachable (mg/L)	1860	1570				
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25				
	Cobalt (Co)-Leachable (mg/L)	0.410	0.554				
	Copper (Cu)-Leachable (mg/L)	0.579	0.651				
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0				
	Lead (Pb)-Leachable (mg/L)	<0.25	<0.25				
	Magnesium (Mg)-Leachable (mg/L)	131	98.2				
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010				
	Nickel (Ni)-Leachable (mg/L)	0.43	0.51				
	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)	41.0	50.1				

* 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	Bismuth (Bi)	DUP-H	L2310789-12
Duplicate	Boron (B)	DUP-H	L2310789-12
Duplicate	Chromium (Cr)	DUP-H	L2310789-12
Duplicate	Cobalt (Co)	DUP-H	L2310789-12
Duplicate	Copper (Cu)	DUP-H	L2310789-12
Duplicate	Silver (Ag)	DUP-H	L2310789-12
Duplicate	Tin (Sn)	DUP-H	L2310789-12
Duplicate	Titanium (Ti)	DUP-H	L2310789-12
Duplicate	Zinc (Zn)	DUP-H	L2310789-12
Matrix Spike	Cadmium (Cd)-Leachable	MS-B	L2310789-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2310789-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cobalt (Co)-Leachable	MS-B	L2310789-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Leachable	MS-B	L2310789-1, -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.
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**
CR-CR6-3060-ED	Soil	Chromium, Hexavalent (Cr +6)	APHA 3500-CR C, EPA 3060A ALKALINE
		Field moist samples are digested with a sodium hydroxide/sodium carbonate solution. After cooling and filtration, the rinsate is adjusted to pH 9, and injected on an ion chromatograph to separate the hexavalent chromium ion. A post column color reaction with diphenylcarbohydrazide and absorbance measurement at 530 nm completes the quantitation.	
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, H ₂ S) 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 (modified 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.	
PREP-MOISTURE-ED	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)

Reference Information

The weighed portion of soil is placed in a 105°C oven to dry to a constant weight; the drying time will vary based on the moisture content of the soil. The dried soil weight is then used to calculate % moisture.

** 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
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

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.



L2310789-COFC

Request Form
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COC #

Page ___ of ___

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

Invoice To			Client / Project Information			Analysis Request							
Same as Report ?			Job #:			Please indicate below Filtered, Preserved or both (F, P, F/P)							
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input type="checkbox"/> No			PO / AFE: PO# 46693 Weekly Bottom Ash - Suite			MET-TCLP-VA (all metals, Hg)	MOISTURE	Chrome 6	MET-CSR+FULL-VA (all metals)				Number of Containers
Company:			LSD: (includes 2:1 pH)										
Contact:			Quote #:										
Address:			ALS Contact:										
Phone:			Sampler:										
Lab Work Order # (lab use only)													

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	MET-TCLP-VA (all metals, Hg)	MOISTURE	Chrome 6	MET-CSR+FULL-VA (all metals)				Number of Containers
BA1928-A-1		10-Jul-19	9:00	Soil	X	X	X	X				1
BA1928-A-2		10-Jul-19	9:00	Soil	X	X		X				1
BA1928-A-3		10-Jul-19	9:00	Soil	X	X		X				1
BA1928-A-4		10-Jul-19	9:00	Soil	X	X		X				1
BA1928-A-5		10-Jul-19	9:00	Soil	X	X		X				1
BA1928-A-6		10-Jul-19	9:00	Soil	X	X		X				1
BA1928-A-7		10-Jul-19	9:00	Soil	X	X		X				1
BA1928-A-8		10-Jul-19	9:00	Soil	X	X		X				1
BA1928-A-9		10-Jul-19	9:00	Soil	X	X		X				1
BA1928-A-10		10-Jul-19	9:00	Soil	X	X		X				1
BA1928-A-11		10-Jul-19	9:00	Soil	X	X		X				1
BA1928-A-12		10-Jul-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:
<i>[Signature]</i>	16-Jul-19	0800	<i>[Signature]</i>	July 16	11:00am	22°C				Yes / No ? If Yes add SIF