

## Bottom Ash Data

2019 Week 16

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The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on May 3, 2019. The data represents bottom ash composite results for week 16 of 2019 (April 14, 2019 to April 20, 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: 23-APR-19  
Report Date: 02-MAY-19 17:58 (MT)  
Version: FINAL

Client Phone: 604-521-1025

## Certificate of Analysis

Lab Work Order #: L2261507  
Project P.O. #: VANCO-0000048466  
Job Reference:  
C of C Numbers:  
Legal Site Desc:

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Brent Mack, B.Sc.  
Account Manager

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2261507-1 Soil 17-APR-19 09:00 BA1916-A-1	L2261507-2 Soil 17-APR-19 09:00 BA1916-A-2	L2261507-3 Soil 17-APR-19 09:00 BA1916-A-3	L2261507-4 Soil 17-APR-19 09:00 BA1916-A-4	L2261507-5 Soil 17-APR-19 09:00 BA1916-A-5
Grouping	Analyte					
<b>SOIL</b>						
<b>Physical Tests</b>	Moisture (%)	21.6	20.6	21.6	21.2	21.7
	pH (1:2 soil:water) (pH)	11.23	11.28	11.50	11.40	11.14
<b>Metals</b>	Aluminum (Al) (mg/kg)	33300	47400	37400	36600	46700
	Antimony (Sb) (mg/kg)	119	118	129	111	104
	Arsenic (As) (mg/kg)	28.1	41.2	27.1	23.4	32.6
	Barium (Ba) (mg/kg)	456	496	482	542	704
	Beryllium (Be) (mg/kg)	0.41	0.37	0.46	0.37	0.37
	Bismuth (Bi) (mg/kg)	8.43	8.08	7.36	6.57	5.64
	Boron (B) (mg/kg)	271	221	300	369	427
	Cadmium (Cd) (mg/kg)	11.0	14.0	11.8	10.6	10.1
	Calcium (Ca) (mg/kg)	124000	111000	134000	111000	126000
	Chromium (Cr) (mg/kg)	167	221	188	257	192
	Cobalt (Co) (mg/kg)	37.5	72.8	38.9	36.6	44.0
	Copper (Cu) (mg/kg)	4060	2000	3220	3610	2580
	Iron (Fe) (mg/kg)	60200	62000	54900	65700	53300
	Lead (Pb) (mg/kg)	458	604	572	1190	330
	Lithium (Li) (mg/kg)	19.3	27.5	20.3	21.3	129
	Magnesium (Mg) (mg/kg)	11800	11700	13400	9940	12100
	Manganese (Mn) (mg/kg)	817	832	830	760	708
	Mercury (Hg) (mg/kg)	<0.050	<0.050	<0.050	<0.050	0.062
	Molybdenum (Mo) (mg/kg)	27.7	38.3	37.9	26.6	30.1
	Nickel (Ni) (mg/kg)	113	191	967	120	158
	Phosphorus (P) (mg/kg)	10800	10300	12000	9820	13500
	Potassium (K) (mg/kg)	5430	5180	5250	4500	5130
	Selenium (Se) (mg/kg)	0.70	1.13	0.69	0.54	0.71
	Silver (Ag) (mg/kg)	3.96	5.75	4.15	5.76	4.48
	Sodium (Na) (mg/kg)	15500	14500	14500	13900	15900
	Strontium (Sr) (mg/kg)	320	345	351	303	321
Sulfur (S) (mg/kg)	13500	12800	13700	11500	11200	
Thallium (Tl) (mg/kg)	0.084	0.185	0.091	0.075	0.072	
Tin (Sn) (mg/kg)	152	106	118	200	80.5	
Titanium (Ti) (mg/kg)	424	711	537	942	1020	
Tungsten (W) (mg/kg)	5.28	4.72	8.32	5.56	8.29	
Uranium (U) (mg/kg)	4.47	4.36	4.90	4.03	4.22	
Vanadium (V) (mg/kg)	50.4	51.8	56.3	45.5	55.2	
Zinc (Zn) (mg/kg)	4730	6560	4530	9850	4150	
Zirconium (Zr) (mg/kg)	1.3	1.6	1.4	1.5	1.3	

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2261507-6 Soil 17-APR-19 09:00 BA1916-A-6	L2261507-7 Soil 17-APR-19 09:00 BA1916-A-7	L2261507-8 Soil 17-APR-19 09:00 BA1916-A-8	L2261507-9 Soil 17-APR-19 09:00 BA1916-A-9	L2261507-10 Soil 17-APR-19 09:00 BA1916-A-10
Grouping	Analyte					
<b>SOIL</b>						
<b>Physical Tests</b>	Moisture (%)	21.3	22.4	21.9	21.2	21.6
	pH (1:2 soil:water) (pH)	11.30	11.38	11.29	11.15	11.20
<b>Metals</b>	Aluminum (Al) (mg/kg)	45200	32800	35500	39300	34900
	Antimony (Sb) (mg/kg)	112	135	109	128	136
	Arsenic (As) (mg/kg)	26.4	36.8	29.2	30.8	36.3
	Barium (Ba) (mg/kg)	442	418	507	381	419
	Beryllium (Be) (mg/kg)	0.37	0.40	0.37	0.40	0.42
	Bismuth (Bi) (mg/kg)	11.0	11.3	8.21	10.6	7.58
	Boron (B) (mg/kg)	442	230	260	301	310
	Cadmium (Cd) (mg/kg)	10.3	15.8	11.2	12.6	13.8
	Calcium (Ca) (mg/kg)	117000	127000	118000	136000	132000
	Chromium (Cr) (mg/kg)	137	266	346	153	176
	Cobalt (Co) (mg/kg)	26.0	48.8	29.8	65.0	47.8
	Copper (Cu) (mg/kg)	1450	1680	2660	3090	2250
	Iron (Fe) (mg/kg)	49300	61100	62100	53000	63500
	Lead (Pb) (mg/kg)	1640	729	1970	506	790
	Lithium (Li) (mg/kg)	16.8	21.9	16.2	25.9	19.9
	Magnesium (Mg) (mg/kg)	11300	11900	12700	12400	12900
	Manganese (Mn) (mg/kg)	1100	946	1240	732	826
	Mercury (Hg) (mg/kg)	<0.050	<0.050	0.098	<0.050	0.061
	Molybdenum (Mo) (mg/kg)	27.5	43.8	31.7	34.5	37.1
	Nickel (Ni) (mg/kg)	123	255	182	126	137
	Phosphorus (P) (mg/kg)	11300	11500	9950	11800	11700
	Potassium (K) (mg/kg)	4650	5500	4810	5610	5620
	Selenium (Se) (mg/kg)	0.69	0.87	0.89	0.76	0.71
	Silver (Ag) (mg/kg)	4.17	4.31	8.32	5.71	3.74
	Sodium (Na) (mg/kg)	13700	14600	13200	15100	16400
	Strontium (Sr) (mg/kg)	303	307	306	329	358
	Sulfur (S) (mg/kg)	11800	15400	11900	14100	14600
Thallium (Tl) (mg/kg)	0.071	0.087	0.112	0.085	0.080	
Tin (Sn) (mg/kg)	144	131	119	143	130	
Titanium (Ti) (mg/kg)	586	553	606	415	420	
Tungsten (W) (mg/kg)	5.60	5.52	5.41	5.28	5.33	
Uranium (U) (mg/kg)	4.39	4.89	4.19	5.13	4.81	
Vanadium (V) (mg/kg)	53.5	54.8	49.2	56.1	56.6	
Zinc (Zn) (mg/kg)	5310	4680	10700	5730	4540	
Zirconium (Zr) (mg/kg)	1.5	1.1	<1.0	1.2	1.2	

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2261507-11	L2261507-12		
		Description	Soil	Soil		
		Sampled Date	17-APR-19	17-APR-19		
		Sampled Time	09:00	09:00		
		Client ID	BA1916-A-11	BA1916-A-12		
Grouping	Analyte					
<b>SOIL</b>						
<b>Physical Tests</b>	Moisture (%)		21.1	21.4		
	pH (1:2 soil:water) (pH)		11.37	11.40		
<b>Metals</b>	Aluminum (Al) (mg/kg)		37500	46800		
	Antimony (Sb) (mg/kg)		117	128		
	Arsenic (As) (mg/kg)		27.3	30.3		
	Barium (Ba) (mg/kg)		442	480		
	Beryllium (Be) (mg/kg)		0.40	0.46		
	Bismuth (Bi) (mg/kg)		6.94	7.78		
	Boron (B) (mg/kg)		291	263		
	Cadmium (Cd) (mg/kg)		12.0	44.5		
	Calcium (Ca) (mg/kg)		139000	136000		
	Chromium (Cr) (mg/kg)		170	161		
	Cobalt (Co) (mg/kg)		43.6	30.7		
	Copper (Cu) (mg/kg)		2220	2040		
	Iron (Fe) (mg/kg)		47900	59000		
	Lead (Pb) (mg/kg)		534	515		
	Lithium (Li) (mg/kg)		19.4	26.1		
	Magnesium (Mg) (mg/kg)		12100	12800		
	Manganese (Mn) (mg/kg)		732	836		
	Mercury (Hg) (mg/kg)		<0.050	<0.050		
	Molybdenum (Mo) (mg/kg)		30.3	36.4		
	Nickel (Ni) (mg/kg)		151	122		
	Phosphorus (P) (mg/kg)		12500	12800		
	Potassium (K) (mg/kg)		5500	5690		
	Selenium (Se) (mg/kg)		0.80	0.72		
	Silver (Ag) (mg/kg)		13.5	5.21		
	Sodium (Na) (mg/kg)		15100	15000		
	Strontium (Sr) (mg/kg)		340	326		
	Sulfur (S) (mg/kg)		13800	13800		
	Thallium (Tl) (mg/kg)		0.085	0.113		
	Tin (Sn) (mg/kg)		101	124		
	Titanium (Ti) (mg/kg)		507	884		
	Tungsten (W) (mg/kg)		5.10	7.01		
	Uranium (U) (mg/kg)		5.04	5.25		
Vanadium (V) (mg/kg)		55.2	59.6			
Zinc (Zn) (mg/kg)		6140	4050			
Zirconium (Zr) (mg/kg)		1.2	1.4			

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2261507-1	L2261507-2	L2261507-3	L2261507-4	L2261507-5
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	17-APR-19	17-APR-19	17-APR-19	17-APR-19	17-APR-19
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1916-A-1	BA1916-A-2	BA1916-A-3	BA1916-A-4	BA1916-A-5
Grouping	Analyte						
<b>SOIL</b>							
<b>TCLP Metals</b>	1st Preliminary pH (pH)		11.58	11.40	11.42	11.37	11.48
	2nd Preliminary pH (pH)		9.15	9.03	9.17	9.11	9.19
	Final pH (pH)		6.18	6.18	6.20	5.97	6.11
	Extraction Solution Initial pH (pH)		2.86	2.86	2.86	2.86	2.86
	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)		4.02	3.88	3.94	3.84	4.69
	Cadmium (Cd)-Leachable (mg/L)		0.249	0.237	0.241	0.230	0.183
	Calcium (Ca)-Leachable (mg/L)		2240	2190	2090	2180	2190
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.672	0.649	0.547	0.671	1.03
	Copper (Cu)-Leachable (mg/L)		1.23	0.990	1.52	0.701	1.42
	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	0.33
	Magnesium (Mg)-Leachable (mg/L)		146	133	141	144	142
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.51	1.27	0.56	0.79	0.57
	Selenium (Se)-Leachable (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	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)		46.0	44.1	62.8	55.1	44.8

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2261507-6	L2261507-7	L2261507-8	L2261507-9	L2261507-10
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	17-APR-19	17-APR-19	17-APR-19	17-APR-19	17-APR-19
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1916-A-6	BA1916-A-7	BA1916-A-8	BA1916-A-9	BA1916-A-10
Grouping	Analyte						
<b>SOIL</b>							
<b>TCLP Metals</b>	1st Preliminary pH (pH)		11.43	11.56	11.51	11.43	11.49
	2nd Preliminary pH (pH)		8.98	9.30	9.33	9.35	9.48
	Final pH (pH)		6.11	6.17	5.93	6.02	5.96
	Extraction Solution Initial pH (pH)		2.86	2.86	2.86	2.86	2.86
	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)		4.10	3.41	3.97	4.17	3.97
	Cadmium (Cd)-Leachable (mg/L)		0.188	0.206	0.209	0.185	0.197
	Calcium (Ca)-Leachable (mg/L)		2150	2090	2030	2120	2160
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.469	0.364	0.817	0.604	0.516
	Copper (Cu)-Leachable (mg/L)		1.39	1.19	1.41	1.13	1.20
	Iron (Fe)-Leachable (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Lead (Pb)-Leachable (mg/L)		0.25	<0.25	0.60	0.30	<0.25
	Magnesium (Mg)-Leachable (mg/L)		134	148	136	136	139
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.51	0.46	0.57	0.49	0.66
	Selenium (Se)-Leachable (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	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)		57.4	39.6	51.7	56.1	49.2

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2261507-11 Soil 17-APR-19 09:00 BA1916-A-11	L2261507-12 Soil 17-APR-19 09:00 BA1916-A-12		
Grouping	Analyte				
<b>SOIL</b>					
<b>TCLP Metals</b>	1st Preliminary pH (pH)	11.52	11.42		
	2nd Preliminary pH (pH)	8.99	9.26		
	Final pH (pH)	6.06	6.08		
	Extraction Solution Initial pH (pH)	2.86	2.86		
	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)	3.56	4.00		
	Cadmium (Cd)-Leachable (mg/L)	0.253	0.263		
	Calcium (Ca)-Leachable (mg/L)	2080	2170		
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25		
	Cobalt (Co)-Leachable (mg/L)	0.606	1.39		
	Copper (Cu)-Leachable (mg/L)	1.54	1.44		
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0		
	Lead (Pb)-Leachable (mg/L)	<0.25	<0.25		
	Magnesium (Mg)-Leachable (mg/L)	128	140		
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010		
	Nickel (Ni)-Leachable (mg/L)	0.54	0.53		
	Selenium (Se)-Leachable (mg/L)	<1.0	<1.0		
	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)	58.8	46.3		

\* 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	Aluminum (Al)	DUP-H	L2261507-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Boron (B)	DUP-H	L2261507-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Copper (Cu)	DUP-H	L2261507-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Lead (Pb)	DUP-H	L2261507-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Manganese (Mn)	DUP-H	L2261507-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Titanium (Ti)	DUP-H	L2261507-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cadmium (Cd)-Leachable	MS-B	L2261507-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2261507-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cobalt (Co)-Leachable	MS-B	L2261507-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Leachable	MS-B	L2261507-1, -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**
<b>HG-200.2-CVAF-VA</b>	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.			
<b>HG-TCLP-CVAFS-VA</b>	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).			
<b>MET-200.2-CCMS-VA</b>	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 <sub>2</sub> S) may be excluded if lost during sampling, storage, or digestion.			
<b>MET-TCLP-CCMS-VA</b>	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).			
<b>MOISTURE-VA</b>	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.			
<b>PH-1:2-VA</b>	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 the pH, Electrometric in Soil and Sediment method - Section B Physical/Inorganic and Misc. Constituents, BC Environmental Laboratory Manual 2007. 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.*



<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
Address:	5150 Riverbend Drive	Email 1:	smckinney@covanta.com	<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT	
	Burnaby BC	Email 2:	rjohnson4@covanta.com	<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT	
Phone:	604-521-1025	Email 3:	dskrpnik@covanta.com	<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT	
	<input type="checkbox"/> Yes <input type="checkbox"/> No		brent.kirkpatrick@metrovancover.org	<b>Analysis Request</b>	
	<input type="checkbox"/> Yes <input type="checkbox"/> No		Sarah.Wellman@metrovancover.org		

<b>Invoice To</b>		<b>Client / Project Information</b>		Please indicate below Filtered, Preserved or both (F, P, F/P)							
Same as Report?		Job #:									
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input type="checkbox"/> No		PO / AFE: PO# 48693 Weekly Bottom Ash - Suite									
Company:		LSD: (includes 2:1 pH)									
Contact:		Quote #:									
Address:											
Phone:											

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
BA1916-A-1		17-Apr-19	9:00	Soil	X	X		X	1
BA1916-A-2		17-Apr-19	9:00	Soil	X	X		X	1
BA1916-A-3		17-Apr-19	9:00	Soil	X	X		X	1
BA1916-A-4		17-Apr-19	9:00	Soil	X	X		X	1
BA1916-A-5		17-Apr-19	9:00	Soil	X	X		X	1
BA1916-A-6		17-Apr-19	9:00	Soil	X	X		X	1
BA1916-A-7		17-Apr-19	9:00	Soil	X	X		X	1
BA1916-A-8		17-Apr-19	9:00	Soil	X	X		X	1
BA1916-A-9		17-Apr-19	9:00	Soil	X	X		X	1
BA1916-A-10		17-Apr-19	9:00	Soil	X	X		X	1
BA1916-A-11		17-Apr-19	9:00	Soil	X	X		X	1
BA1916-A-12		17-Apr-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.

<b>SHIPMENT RELEASE (client use)</b>			<b>SHIPMENT RECEPTION (lab use only)</b>				<b>SHIPMENT VERIFICATION (lab use only)</b>			
Released by:	Date (dd-mmm-yy):	Time (hh-mm):	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations:
<i>[Signature]</i>	23-APR-19	08:00				20°C	<i>[Signature]</i>	APR 23 11:40am		Yes / No? If Yes add SIF