

Bottom Ash Data

2018 Week 33

The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on August 29, 2018. The data represents bottom ash composite results for week 33 of 2018 (August 12, 2018 to August 18, 2018).

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: 21-AUG-18
Report Date: 29-AUG-18 14:22 (MT)
Version: FINAL

Client Phone: 604-521-1025

Certificate of Analysis

Lab Work Order #: L2150408
Project P.O. #: VANCO-0000047506
Job Reference: WEEKLY BOTTOM ASH - SUITE (INCLUDES 2:1
PH)
C of C Numbers:
Legal Site Desc:

Comments:

Brent Mack, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2150408-1 Soil 15-AUG-18 09:00 BA1833-A-1	L2150408-2 Soil 15-AUG-18 09:00 BA1833-A-2	L2150408-3 Soil 15-AUG-18 09:00 BA1833-A-3	L2150408-4 Soil 15-AUG-18 09:00 BA1833-A-4	L2150408-5 Soil 15-AUG-18 09:00 BA1833-A-5	
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	17.9	17.4	19.2	20.4	16.4
	pH (1:2 soil:water) (pH)	11.02	11.33	11.19	11.43	11.24
Metals	Aluminum (Al) (mg/kg)	41100	28600	26100	30700	25500
	Antimony (Sb) (mg/kg)	116	123	106	85.9	96.0
	Arsenic (As) (mg/kg)	40.1	34.5	35.2	31.2	39.1
	Barium (Ba) (mg/kg)	531	475	484	536	551
	Beryllium (Be) (mg/kg)	0.36	0.43	0.44	0.38	0.41
	Bismuth (Bi) (mg/kg)	9.81	11.1	7.98	5.70	6.16
	Boron (B) (mg/kg)	340	316	350	204	232
	Cadmium (Cd) (mg/kg)	11.9	11.7	11.4	21.3	67.2
	Calcium (Ca) (mg/kg)	118000	107000	108000	102000	117000
	Chromium (Cr) (mg/kg)	180	143	168	296	139
	Cobalt (Co) (mg/kg)	38.8	33.0	62.4	40.6	45.1
	Copper (Cu) (mg/kg)	4570	2720	1860	1410	2160
	Iron (Fe) (mg/kg)	83200	52100	48600	62500	56100
	Lead (Pb) (mg/kg)	1570	541	1130	342	1310
	Lithium (Li) (mg/kg)	16.7	17.7	35.3	16.3	21.6
	Magnesium (Mg) (mg/kg)	10300	9700	9280	9660	9590
	Manganese (Mn) (mg/kg)	1210	705	838	761	809
	Mercury (Hg) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	45.4	47.5	42.4	37.9	38.4
	Nickel (Ni) (mg/kg)	162	198	252	238	145
	Phosphorus (P) (mg/kg)	11800	9510	10300	10200	13600
	Potassium (K) (mg/kg)	4690	4490	4880	4470	4840
	Selenium (Se) (mg/kg)	0.34	0.49	0.30	0.24	0.29
	Silver (Ag) (mg/kg)	4.67	4.95	7.63	3.79	3.92
	Sodium (Na) (mg/kg)	13700	14900	14500	14300	13400
	Strontium (Sr) (mg/kg)	343	253	276	268	280
	Sulfur (S) (mg/kg)	12200	11200	10700	9800	10000
	Thallium (Tl) (mg/kg)	0.150	0.104	0.123	0.143	0.120
	Tin (Sn) (mg/kg)	154	104	99.4	65.2	79.3
	Titanium (Ti) (mg/kg)	842	771	659	660	381
	Tungsten (W) (mg/kg)	6.08	5.61	17.4	5.16	6.24
	Uranium (U) (mg/kg)	5.54	5.38	5.48	5.20	5.37
	Vanadium (V) (mg/kg)	56.0	50.6	52.6	54.1	56.8
	Zinc (Zn) (mg/kg)	4590	3680	4760	13200	3670
	Zirconium (Zr) (mg/kg)	1.2	1.0	1.0	<1.0	<1.0

* 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	L2150408-6 Soil 15-AUG-18 09:00 BA1833-A-6	L2150408-7 Soil 15-AUG-18 09:00 BA1833-A-7	L2150408-8 Soil 15-AUG-18 09:00 BA1833-A-8	L2150408-9 Soil 15-AUG-18 09:00 BA1833-A-9	L2150408-10 Soil 15-AUG-18 09:00 BA1833-A-10	
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	17.9	17.0	20.2	18.3	17.8
	pH (1:2 soil:water) (pH)	11.42	11.42	11.05	11.24	11.38
Metals	Aluminum (Al) (mg/kg)	27900	33800	30400	28500	24800
	Antimony (Sb) (mg/kg)	122	169	112	105	98.7
	Arsenic (As) (mg/kg)	30.8	36.0	37.1	34.8	33.2
	Barium (Ba) (mg/kg)	532	504	505	541	482
	Beryllium (Be) (mg/kg)	0.39	0.38	0.43	0.45	0.37
	Bismuth (Bi) (mg/kg)	9.14	7.03	6.21	6.08	6.72
	Boron (B) (mg/kg)	241	259	277	260	340
	Cadmium (Cd) (mg/kg)	12.9	14.1	20.8	12.2	11.0
	Calcium (Ca) (mg/kg)	108000	114000	124000	115000	101000
	Chromium (Cr) (mg/kg)	141	145	181	142	138
	Cobalt (Co) (mg/kg)	31.3	48.5	136	67.7	51.6
	Copper (Cu) (mg/kg)	1500	5340	1460	5570	13900
	Iron (Fe) (mg/kg)	43400	46500	58800	51200	60800
	Lead (Pb) (mg/kg)	1280	342	457	378	314
	Lithium (Li) (mg/kg)	16.2	19.9	37.1	20.3	18.2
	Magnesium (Mg) (mg/kg)	9140	8950	9250	9510	8540
	Manganese (Mn) (mg/kg)	641	656	657	850	890
	Mercury (Hg) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	42.9	41.9	39.3	47.2	30.4
	Nickel (Ni) (mg/kg)	106	144	149	308	167
	Phosphorus (P) (mg/kg)	9810	13500	12700	11200	9450
	Potassium (K) (mg/kg)	4610	5060	5410	5270	4350
	Selenium (Se) (mg/kg)	0.63	0.32	0.31	0.31	0.37
	Silver (Ag) (mg/kg)	4.03	11.1	9.61	5.87	6.43
	Sodium (Na) (mg/kg)	13500	14500	14700	14500	13300
	Strontium (Sr) (mg/kg)	258	266	298	283	248
	Sulfur (S) (mg/kg)	11000	11700	13400	12100	10900
	Thallium (Tl) (mg/kg)	0.124	0.111	0.117	0.113	0.121
	Tin (Sn) (mg/kg)	96.8	149	151	278	126
	Titanium (Ti) (mg/kg)	823	512	631	754	844
	Tungsten (W) (mg/kg)	6.63	5.82	5.64	6.31	6.33
	Uranium (U) (mg/kg)	5.27	6.19	6.58	6.31	5.19
	Vanadium (V) (mg/kg)	52.1	68.5	63.3	58.3	50.4
	Zinc (Zn) (mg/kg)	4280	7400	3780	3780	6320
	Zirconium (Zr) (mg/kg)	<1.0	<1.0	<1.0	<1.0	1.0

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2150408-11	L2150408-12		
		Description	Soil	Soil		
		Sampled Date	15-AUG-18	15-AUG-18		
		Sampled Time	09:00	09:00		
		Client ID	BA1833-A-11	BA1833-A-12		
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	19.1	20.2			
	pH (1:2 soil:water) (pH)	11.48	11.43			
Metals	Aluminum (Al) (mg/kg)	38300	39800			
	Antimony (Sb) (mg/kg)	110	113			
	Arsenic (As) (mg/kg)	36.7	39.6			
	Barium (Ba) (mg/kg)	492	543			
	Beryllium (Be) (mg/kg)	0.43	0.42			
	Bismuth (Bi) (mg/kg)	9.64	26.9			
	Boron (B) (mg/kg)	305	258			
	Cadmium (Cd) (mg/kg)	13.2	12.9			
	Calcium (Ca) (mg/kg)	124000	114000			
	Chromium (Cr) (mg/kg)	231	159			
	Cobalt (Co) (mg/kg)	598	33.9			
	Copper (Cu) (mg/kg)	1870	33200			
	Iron (Fe) (mg/kg)	44400	52200			
	Lead (Pb) (mg/kg)	911	1230			
	Lithium (Li) (mg/kg)	74.2	18.7			
	Magnesium (Mg) (mg/kg)	10500	11600			
	Manganese (Mn) (mg/kg)	651	933			
	Mercury (Hg) (mg/kg)	<0.050	<0.050			
	Molybdenum (Mo) (mg/kg)	47.6	42.1			
	Nickel (Ni) (mg/kg)	146	181			
	Phosphorus (P) (mg/kg)	13600	11200			
	Potassium (K) (mg/kg)	5410	5770			
	Selenium (Se) (mg/kg)	0.29	0.35			
	Silver (Ag) (mg/kg)	6.13	6.21			
	Sodium (Na) (mg/kg)	15700	15100			
	Strontium (Sr) (mg/kg)	314	272			
	Sulfur (S) (mg/kg)	12100	12500			
	Thallium (Tl) (mg/kg)	0.127	0.162			
	Tin (Sn) (mg/kg)	155	238			
	Titanium (Ti) (mg/kg)	459	657			
	Tungsten (W) (mg/kg)	8.27	5.00			
	Uranium (U) (mg/kg)	6.13	5.42			
Vanadium (V) (mg/kg)	58.0	63.2				
Zinc (Zn) (mg/kg)	6520	15700				
Zirconium (Zr) (mg/kg)	1.6	1.1				

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2150408-1	L2150408-2	L2150408-3	L2150408-4	L2150408-5
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	15-AUG-18	15-AUG-18	15-AUG-18	15-AUG-18	15-AUG-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1833-A-1	BA1833-A-2	BA1833-A-3	BA1833-A-4	BA1833-A-5
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.53	11.41	11.46	11.37	11.44
	2nd Preliminary pH (pH)		9.50	9.30	9.33	9.25	9.26
	Final pH (pH)		5.64	6.06	5.95	6.02	5.82
	Extraction Solution Initial pH (pH)		2.88	2.88	2.88	2.88	2.88
	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)		2.81	3.22	2.98	2.77	3.35
	Cadmium (Cd)-Leachable (mg/L)		0.181	0.384	0.205	0.218	0.209
	Calcium (Ca)-Leachable (mg/L)		1740	1920	1920	1960	1920
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.896	0.575	2.71	0.722	1.83
	Copper (Cu)-Leachable (mg/L)		1.40	1.11	1.59	1.33	1.79
	Iron (Fe)-Leachable (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Lead (Pb)-Leachable (mg/L)		4.09	0.63	<0.25	<0.25	5.09
	Magnesium (Mg)-Leachable (mg/L)		106	111	112	113	112
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.68	0.46	0.69	0.52	0.98
	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)		46.2	50.8	81.4	45.1	59.2

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2150408-6	L2150408-7	L2150408-8	L2150408-9	L2150408-10
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	15-AUG-18	15-AUG-18	15-AUG-18	15-AUG-18	15-AUG-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1833-A-6	BA1833-A-7	BA1833-A-8	BA1833-A-9	BA1833-A-10
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.37	11.48	11.42	11.47	11.44
	2nd Preliminary pH (pH)		9.35	9.44	9.37	9.39	9.22
	Final pH (pH)		5.30	5.37	5.92	5.85	5.84
	Extraction Solution Initial pH (pH)		2.88	2.88	2.88	2.88	2.88
	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)		2.48	2.49	2.74	3.95	2.97
	Cadmium (Cd)-Leachable (mg/L)		0.175	0.193	0.446	0.206	0.169
	Calcium (Ca)-Leachable (mg/L)		1590	1740	1910	1930	1850
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.717	0.414	0.715	0.450	5.58
	Copper (Cu)-Leachable (mg/L)		3.14	1.92	1.35	1.19	1.70
	Iron (Fe)-Leachable (mg/L)		<5.0	5.2	<5.0	<5.0	<5.0
	Lead (Pb)-Leachable (mg/L)		9.34	0.55	0.40	<0.25	<0.25
	Magnesium (Mg)-Leachable (mg/L)		89.1	103	111	110	107
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.52	0.48	1.63	0.58	0.53
	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)		77.1	55.1	65.0	58.8	64.6

* 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	L2150408-11 Soil 15-AUG-18 09:00 BA1833-A-11	L2150408-12 Soil 15-AUG-18 09:00 BA1833-A-12		
Grouping	Analyte				
SOIL					
TCLP Metals	1st Preliminary pH (pH)	11.52	11.46		
	2nd Preliminary pH (pH)	9.44	9.51		
	Final pH (pH)	5.58	5.84		
	Extraction Solution Initial pH (pH)	2.88	2.88		
	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)	2.72	3.66		
	Cadmium (Cd)-Leachable (mg/L)	0.206	0.179		
	Calcium (Ca)-Leachable (mg/L)	1820	1920		
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25		
	Cobalt (Co)-Leachable (mg/L)	0.501	0.585		
	Copper (Cu)-Leachable (mg/L)	1.73	2.77		
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0		
	Lead (Pb)-Leachable (mg/L)	0.48	0.26		
	Magnesium (Mg)-Leachable (mg/L)	103	117		
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010		
	Nickel (Ni)-Leachable (mg/L)	0.51	1.27		
	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)	74.3	57.8		

* 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	L2150408-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Iron (Fe)	DUP-H	L2150408-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Lead (Pb)	DUP-H	L2150408-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Manganese (Mn)	DUP-H	L2150408-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Silver (Ag)	DUP-H	L2150408-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Tungsten (W)	DUP-H	L2150408-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2150408-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cobalt (Co)-Leachable	MS-B	L2150408-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Copper (Cu)-Leachable	MS-B	L2150408-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Leachable	MS-B	L2150408-1, -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**
AG-200.2-A-CCMS-VA	Soil	Elevated Ag in Soil by CRC ICPMS	EPA 200.2/6020A
<p>This method uses a heated strong acid digestion with HNO₃ and HCl and 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. Analysis is by Collision/Reaction Cell ICPMS.</p>			
HG-200.2-CVAF-VA	Soil	Mercury in Soil by CVAAS	EPA 200.2/1631E (mod)
<p>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.</p>			
HG-TCLP-CVAFS-VA	Soil	Mercury by CVAAS (TCLP)	EPA 1311/245.7
<p>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).</p>			
MET-200.2-CCMS-VA	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)
<p>This method uses a heated strong acid digestion with HNO₃ and HCl and 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.</p>			
MET-TCLP-ICP-VA	Soil	Metals by ICPOES (TCLP)	EPA 1311/6010B
<p>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 inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).</p>			
MOISTURE-VA	Soil	Moisture content	CWS for PHC in Soil - Tier 1
<p>This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.</p>			
PH-1:2-VA	Soil	pH in Soil (1:2 Soil:Water Extraction)	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL
<p>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.</p>			

** 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

Reference Information

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.



L2150408-COFC

Main of Custody / Analytical Request Form
 Canada Toll Free: 1 800 668 9878
 www.alsglobal.com

COC # _____

Page _____ of _____

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

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

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	MET-TCLP-VA (all metals, Hg)	MOISTURE	Chrome 6	MET-CSR-FULL-VA (all metals)	Number of Containers				
BA1833-A-1		15-Aug-18	9:00	Soil	X	X		X					1
BA1833-A-2		15-Aug-18	9:00	Soil	X	X		X					1
BA1833-A-3		15-Aug-18	9:00	Soil	X	X		X					1
BA1833-A-4		15-Aug-18	9:00	Soil	X	X		X					1
BA1833-A-5		15-Aug-18	9:00	Soil	X	X		X					1
BA1833-A-6		15-Aug-18	9:00	Soil	X	X		X					1
BA1833-A-7		15-Aug-18	9:00	Soil	X	X		X					1
BA1833-A-8		15-Aug-18	9:00	Soil	X	X		X					1
BA1833-A-9		15-Aug-18	9:00	Soil	X	X		X					1
BA1833-A-10		15-Aug-18	9:00	Soil	X	X		X					1
BA1833-A-11		15-Aug-18	9:00	Soil	X	X		X					1
BA1833-A-12		15-Aug-18	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-mm-yy): 21-Aug-18	Time (hh-mm): 09:00	Received by: (A2) JC	Date: 8/21/18	Time: 11:23 AM	Temperature: 23±23 °C	Verified by:	Date:	Time:	Observations: Yes / No ?	
											If Yes add SIF