

Bottom Ash Data

2019 Week 8

The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on March 6, 2019. The data represents bottom ash composite results for week 8 of 2019 (February 17, 2019 to February 23, 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: 26-FEB-19
Report Date: 05-MAR-19 13:41 (MT)
Version: FINAL

Client Phone: 604-521-1025

Certificate of Analysis

Lab Work Order #: L2237094
Project P.O. #: VANCO-0000048466
Job Reference:
C of C Numbers:
Legal Site Desc:

Brent Mack, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2237094-1 Soil 20-FEB-19 09:00 BA1908-A-1	L2237094-2 Soil 20-FEB-19 09:00 BA1908-A-2	L2237094-3 Soil 20-FEB-19 09:00 BA1908-A-3	L2237094-4 Soil 20-FEB-19 09:00 BA1908-A-4	L2237094-5 Soil 20-FEB-19 09:00 BA1908-A-5	
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	20.8	21.0	22.2	20.7	22.7
	pH (1:2 soil:water) (pH)	11.51	11.73	11.30	11.73	11.57
Metals	Aluminum (Al) (mg/kg)	38500	41800	43100	55500	36400
	Antimony (Sb) (mg/kg)	158	167	157	238	150
	Arsenic (As) (mg/kg)	27.8	32.3	22.4	23.7	23.7
	Barium (Ba) (mg/kg)	584	580	560	629	596
	Beryllium (Be) (mg/kg)	0.42	0.40	0.39	0.43	0.41
	Bismuth (Bi) (mg/kg)	11.6	14.4	9.52	7.46	11.9
	Boron (B) (mg/kg)	529	349	328	333	391
	Cadmium (Cd) (mg/kg)	13.8	13.5	14.0	15.0	11.7
	Calcium (Ca) (mg/kg)	152000	150000	136000	162000	137000
	Chromium (Cr) (mg/kg)	171	236	166	211	156
	Cobalt (Co) (mg/kg)	44.7	46.6	48.3	43.9	35.8
	Copper (Cu) (mg/kg)	6790	8430	4380	5500	7360
	Iron (Fe) (mg/kg)	58900	65100	45400	66700	64400
	Lead (Pb) (mg/kg)	456	727	1490	1780	958
	Lithium (Li) (mg/kg)	18.4	19.6	15.7	18.3	17.3
	Magnesium (Mg) (mg/kg)	12600	11700	11100	14900	12000
	Manganese (Mn) (mg/kg)	916	971	889	1030	952
	Mercury (Hg) (mg/kg)	0.055	0.074	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	69.9	55.3	66.8	52.3	91.4
	Nickel (Ni) (mg/kg)	356	277	101	144	143
	Phosphorus (P) (mg/kg)	11700	12000	10000	12400	10100
	Potassium (K) (mg/kg)	6290	5780	5540	5990	5660
	Selenium (Se) (mg/kg)	0.46	0.41	0.42	0.40	0.39
	Silver (Ag) (mg/kg)	4.87	7.39	4.95	4.92	4.16
	Sodium (Na) (mg/kg)	18200	16000	16300	17500	16700
	Strontium (Sr) (mg/kg)	338	341	498	681	360
	Sulfur (S) (mg/kg)	13100	13400	11600	13700	11500
	Thallium (Tl) (mg/kg)	0.068	0.079	0.069	0.074	0.063
	Tin (Sn) (mg/kg)	167	236	153	206	146
	Titanium (Ti) (mg/kg)	663	480	858	795	646
	Tungsten (W) (mg/kg)	5.87	8.97	5.31	7.34	7.15
	Uranium (U) (mg/kg)	5.29	5.41	4.64	5.59	5.26
	Vanadium (V) (mg/kg)	54.2	52.0	50.5	58.5	48.7
	Zinc (Zn) (mg/kg)	4630	7920	4290	5270	5900
	Zirconium (Zr) (mg/kg)	1.2	1.5	1.9	2.0	1.2

* 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	L2237094-6 Soil 20-FEB-19 09:00 BA1908-A-6	L2237094-7 Soil 20-FEB-19 09:00 BA1908-A-7	L2237094-8 Soil 20-FEB-19 09:00 BA1908-A-8	L2237094-9 Soil 20-FEB-19 09:00 BA1908-A-9	L2237094-10 Soil 20-FEB-19 09:00 BA1908-A-10	
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	21.3	20.9	21.5	22.2	22.7
	pH (1:2 soil:water) (pH)	11.38	11.62	11.77	11.85	11.68
Metals	Aluminum (Al) (mg/kg)	34200	34400	42100	41300	36000
	Antimony (Sb) (mg/kg)	187	546	174	170	172
	Arsenic (As) (mg/kg)	29.0	24.5	24.7	23.8	29.4
	Barium (Ba) (mg/kg)	458	553	533	600	560
	Beryllium (Be) (mg/kg)	0.38	0.37	0.43	0.39	0.37
	Bismuth (Bi) (mg/kg)	9.96	12.7	7.91	6.49	6.82
	Boron (B) (mg/kg)	342	313	345	354	481
	Cadmium (Cd) (mg/kg)	14.8	13.0	14.5	12.1	12.3
	Calcium (Ca) (mg/kg)	141000	137000	145000	140000	137000
	Chromium (Cr) (mg/kg)	183	186	187	279	165
	Cobalt (Co) (mg/kg)	34.1	26.4	42.1	27.5	24.0
	Copper (Cu) (mg/kg)	7560	2040	1260	5160	1930
	Iron (Fe) (mg/kg)	61600	58700	37000	63600	65800
	Lead (Pb) (mg/kg)	641	1470	903	483	1170
	Lithium (Li) (mg/kg)	17.4	15.3	17.4	20.0	15.6
	Magnesium (Mg) (mg/kg)	12000	12300	12000	12100	12300
	Manganese (Mn) (mg/kg)	822	848	707	914	1100
	Mercury (Hg) (mg/kg)	0.056	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	94.3	45.3	52.5	53.9	44.6
	Nickel (Ni) (mg/kg)	275	161	153	244	156
	Phosphorus (P) (mg/kg)	13500	10500	10600	10700	11400
	Potassium (K) (mg/kg)	6230	5820	5450	5370	5720
	Selenium (Se) (mg/kg)	0.50	0.31	0.40	0.36	0.39
	Silver (Ag) (mg/kg)	5.72	4.22	5.77	7.65	4.00
	Sodium (Na) (mg/kg)	17800	16100	16200	15200	16300
	Strontium (Sr) (mg/kg)	335	527	335	310	323
	Sulfur (S) (mg/kg)	13600	12500	13600	11500	11700
	Thallium (Tl) (mg/kg)	0.082	0.071	0.068	0.067	0.130
	Tin (Sn) (mg/kg)	270	133	169	164	293
	Titanium (Ti) (mg/kg)	424	710	633	569	448
	Tungsten (W) (mg/kg)	6.30	6.12	7.36	7.06	8.47
	Uranium (U) (mg/kg)	5.77	5.24	5.62	5.07	5.24
	Vanadium (V) (mg/kg)	51.2	53.6	54.3	51.8	47.2
	Zinc (Zn) (mg/kg)	10200	5380	4160	4860	10300
	Zirconium (Zr) (mg/kg)	2.7	1.1	1.6	1.4	1.3

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2237094-11	L2237094-12		
		Description	Soil	Soil		
		Sampled Date	20-FEB-19	20-FEB-19		
		Sampled Time	09:00	09:00		
		Client ID	BA1908-A-11	BA1908-A-12		
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)		21.7	22.3		
	pH (1:2 soil:water) (pH)		11.83	11.40		
Metals	Aluminum (Al) (mg/kg)		39800	32400		
	Antimony (Sb) (mg/kg)		173	187		
	Arsenic (As) (mg/kg)		28.7	25.7		
	Barium (Ba) (mg/kg)		599	585		
	Beryllium (Be) (mg/kg)		0.44	0.39		
	Bismuth (Bi) (mg/kg)		49.4	9.52		
	Boron (B) (mg/kg)		439	289		
	Cadmium (Cd) (mg/kg)		12.5	13.7		
	Calcium (Ca) (mg/kg)		135000	150000		
	Chromium (Cr) (mg/kg)		171	182		
	Cobalt (Co) (mg/kg)		45.6	25.2		
	Copper (Cu) (mg/kg)		9580	4020		
	Iron (Fe) (mg/kg)		53300	70200		
	Lead (Pb) (mg/kg)		505	636		
	Lithium (Li) (mg/kg)		17.8	16.5		
	Magnesium (Mg) (mg/kg)		13500	14200		
	Manganese (Mn) (mg/kg)		851	802		
	Mercury (Hg) (mg/kg)		0.072	0.057		
	Molybdenum (Mo) (mg/kg)		63.1	55.0		
	Nickel (Ni) (mg/kg)		140	173		
	Phosphorus (P) (mg/kg)		9820	11800		
	Potassium (K) (mg/kg)		5490	5870		
	Selenium (Se) (mg/kg)		0.43	0.45		
	Silver (Ag) (mg/kg)		4.11	5.32		
	Sodium (Na) (mg/kg)		16400	17400		
	Strontium (Sr) (mg/kg)		317	365		
	Sulfur (S) (mg/kg)		11200	13800		
	Thallium (Tl) (mg/kg)		0.069	0.073		
	Tin (Sn) (mg/kg)		143	186		
	Titanium (Ti) (mg/kg)		650	602		
	Tungsten (W) (mg/kg)		9.27	7.87		
	Uranium (U) (mg/kg)		5.12	5.43		
Vanadium (V) (mg/kg)		48.5	51.7			
Zinc (Zn) (mg/kg)		4530	4570			
Zirconium (Zr) (mg/kg)		1.2	1.3			

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2237094-1	L2237094-2	L2237094-3	L2237094-4	L2237094-5
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	20-FEB-19	20-FEB-19	20-FEB-19	20-FEB-19	20-FEB-19
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1908-A-1	BA1908-A-2	BA1908-A-3	BA1908-A-4	BA1908-A-5
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.64	11.69	11.59	11.56	11.57
	2nd Preliminary pH (pH)		8.95	9.56	8.99	9.06	8.78
	Final pH (pH)		6.47	6.32	6.41	6.46	6.36
	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)		4.47	4.38	4.09	4.52	5.07
	Cadmium (Cd)-Leachable (mg/L)		0.143	0.146	0.212	0.176	0.170
	Calcium (Ca)-Leachable (mg/L)		1880	1890	1870	1980	1920
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.819	0.567	0.905	0.377	0.488
	Copper (Cu)-Leachable (mg/L)		0.454	0.500	0.574	0.118	0.302
	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)		122	126	126	124	121
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.52	0.48	0.56	0.46	0.58
	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)		35.2	39.3	44.8	30.3	32.5

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2237094-6	L2237094-7	L2237094-8	L2237094-9	L2237094-10
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	20-FEB-19	20-FEB-19	20-FEB-19	20-FEB-19	20-FEB-19
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1908-A-6	BA1908-A-7	BA1908-A-8	BA1908-A-9	BA1908-A-10
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.50	11.65	11.61	11.68	11.62
	2nd Preliminary pH (pH)		9.07	8.92	9.18	9.49	9.30
	Final pH (pH)		6.40	6.39	6.24	6.48	6.39
	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)		4.06	4.89	3.91	4.82	4.35
	Cadmium (Cd)-Leachable (mg/L)		0.231	0.205	0.132	0.158	0.178
	Calcium (Ca)-Leachable (mg/L)		1950	1950	1900	1900	1810
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.463	0.401	0.487	0.503	0.689
	Copper (Cu)-Leachable (mg/L)		0.524	0.202	0.083	0.796	0.613
	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	127	123	122	121
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.41	0.58	1.16	0.51	0.48
	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)		29.0	30.6	36.0	36.8	47.8

* 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	L2237094-11 Soil 20-FEB-19 09:00 BA1908-A-11	L2237094-12 Soil 20-FEB-19 09:00 BA1908-A-12		
Grouping	Analyte				
SOIL					
TCLP Metals	1st Preliminary pH (pH)	11.74	11.65		
	2nd Preliminary pH (pH)	9.17	9.24		
	Final pH (pH)	6.26	6.41		
	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)	4.47	5.77		
	Cadmium (Cd)-Leachable (mg/L)	0.201	0.175		
	Calcium (Ca)-Leachable (mg/L)	1880	1990		
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25		
	Cobalt (Co)-Leachable (mg/L)	0.711	0.559		
	Copper (Cu)-Leachable (mg/L)	0.534	0.641		
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0		
	Lead (Pb)-Leachable (mg/L)	0.42	<0.25		
	Magnesium (Mg)-Leachable (mg/L)	128	127		
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010		
	Nickel (Ni)-Leachable (mg/L)	0.48	0.46		
	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)	37.1	31.0		

* 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	Mercury (Hg)	DUP-H	L2237094-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Antimony (Sb)	DUP-H	L2237094-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Bismuth (Bi)	DUP-H	L2237094-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Boron (B)	DUP-H	L2237094-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Cobalt (Co)	DUP-H	L2237094-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Copper (Cu)	DUP-H	L2237094-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Lead (Pb)	DUP-H	L2237094-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Lithium (Li)	DUP-H	L2237094-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Nickel (Ni)	DUP-H	L2237094-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Zinc (Zn)	DUP-H	L2237094-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2237094-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Copper (Cu)-Leachable	MS-B	L2237094-1, -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**
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 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

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.

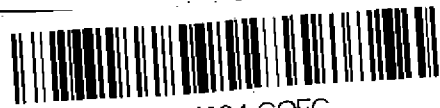
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

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.



COC# _____

Page ____ of ____

Report To		Repo		Service Requested (Rush for routine analysis subject to availability)	
Company:	Covanta Energy	<input type="checkbox"/> Stan			
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		
Phone:	604-521-1025	Email 2:	rjohnson4@covanta.com		
	<input type="checkbox"/> Yes <input type="checkbox"/> No	Email 3:	dskrypnik@covanta.com		
			brent.kirkpatrick@metrovancoouver.org		
			Sarah.Wellman@metrovancoouver.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			
Company:		LSD: (includes 2:1 pH)			
Contact:		Quote #:			
Address:					
Phone:					

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	Analysis Request				Number of Containers
					MET-TCLP-V4 (all metals, Hg)	MOISTURE	Chrome 6	MET-CSR+FULL-V4 (all metals)	
BA1908-A-1		20-Feb-19	9:00	Soil	X	X		X	1
BA1908-A-2		20-Feb-19	9:00	Soil	X	X		X	1
BA1908-A-3		20-Feb-19	9:00	Soil	X	X		X	1
BA1908-A-4		20-Feb-19	9:00	Soil	X	X		X	1
BA1908-A-5		20-Feb-19	9:00	Soil	X	X		X	1
BA1908-A-6		20-Feb-19	9:00	Soil	X	X		X	1
BA1908-A-7		20-Feb-19	9:00	Soil	X	X		X	1
BA1908-A-8		20-Feb-19	9:00	Soil	X	X		X	1
BA1908-A-9		20-Feb-19	9:00	Soil	X	X		X	1
BA1908-A-10		20-Feb-19	9:00	Soil	X	X		X	1
BA1908-A-11		20-Feb-19	9:00	Soil	X	X		X	1
BA1908-A-12		20-Feb-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-mm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations:
<i>[Signature]</i>	26-Feb-19	08:00	<i>[Signature]</i>	2/26	12pm	17 °C				Yes / No ? If Yes add SIF