

Bottom Ash Data

2018 Week 39

The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on October 11, 2018. The data represents bottom ash composite results for week 39 of 2018 (September 23, 2018 to September 29, 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: 02-OCT-18
Report Date: 11-OCT-18 13:36 (MT)
Version: FINAL

Client Phone: 604-521-1025

Certificate of Analysis

Lab Work Order #: L2174671
Project P.O. #: VANCO-0000047506
Job Reference: WEEKLY BOTTOM ASH - SUITE
C of C Numbers:
Legal Site Desc:

Brent Mack, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2174671-1	L2174671-2	L2174671-3	L2174671-4	L2174671-5
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	26-SEP-18	26-SEP-18	26-SEP-18	26-SEP-18	26-SEP-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1839-A-1	BA1839-A-2	BA1839-A-3	BA1839-A-4	BA1839-A-5
Grouping	Analyte						
SOIL							
Physical Tests	Moisture (%)		21.3	22.1	20.8	19.1	19.4
	pH (1:2 soil:water) (pH)		10.60	11.15	10.67	10.49	10.54
Metals	Aluminum (Al) (mg/kg)		35900	34800	38100	48800	32500
	Antimony (Sb) (mg/kg)		105	90.5	97.9	87.9	126
	Arsenic (As) (mg/kg)		24.7	22.1	22.8	31.8	23.3
	Barium (Ba) (mg/kg)		643	702	679	722	665
	Beryllium (Be) (mg/kg)		0.42	0.39	0.58	0.42	0.43
	Bismuth (Bi) (mg/kg)		13.4	5.26	7.11	7.85	30.0
	Boron (B) (mg/kg)		443	297	310	250	317
	Cadmium (Cd) (mg/kg)		15.3	10.2	11.8	11.1	22.6
	Calcium (Ca) (mg/kg)		124000	112000	124000	119000	128000
	Chromium (Cr) (mg/kg)		277	148	159	145	186
	Cobalt (Co) (mg/kg)		76.2	24.4	22.7	29.0	33.8
	Copper (Cu) (mg/kg)		2930	1640	1550	3070	9730
	Iron (Fe) (mg/kg)		68000	57000	50900	72100	58400
	Lead (Pb) (mg/kg)		1220	704	551	706	8170
	Lithium (Li) (mg/kg)		28.2	15.7	20.2	15.3	16.7
	Magnesium (Mg) (mg/kg)		9840	9730	11600	9760	10500
	Manganese (Mn) (mg/kg)		881	859	910	1040	968
	Mercury (Hg) (mg/kg)		0.114	0.060	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)		126	79.1	79.9	80.9	93.9
	Nickel (Ni) (mg/kg)		523	170	153	156	322
	Phosphorus (P) (mg/kg)		11500	11600	12200	11100	10900
	Potassium (K) (mg/kg)		4870	4970	5090	4580	5020
	Selenium (Se) (mg/kg)		0.42	0.33	0.28	0.36	0.40
	Silver (Ag) (mg/kg)		8.23	5.10	6.04	6.64	14.5
	Sodium (Na) (mg/kg)		16500	16500	17200	15500	16600
	Strontium (Sr) (mg/kg)		294	441	307	314	277
	Sulfur (S) (mg/kg)		9400	8200	8800	8100	9700
Thallium (Tl) (mg/kg)		0.137	0.110	0.100	0.092	0.117	
Tin (Sn) (mg/kg)		129	114	98.4	289	598	
Titanium (Ti) (mg/kg)		657	968	664	1270	566	
Tungsten (W) (mg/kg)		5.19	9.63	3.84	4.91	4.31	
Uranium (U) (mg/kg)		6.22	5.31	5.49	5.30	5.98	
Vanadium (V) (mg/kg)		71.7	61.5	71.0	71.0	86.7	
Zinc (Zn) (mg/kg)		5050	4150	2910	5190	4650	
Zirconium (Zr) (mg/kg)		1.5	1.6	1.8	2.8	1.1	

* 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	L2174671-6 Soil 26-SEP-18 09:00 BA1839-A-6	L2174671-7 Soil 26-SEP-18 09:00 BA1839-A-7	L2174671-8 Soil 26-SEP-18 09:00 BA1839-A-8	L2174671-9 Soil 26-SEP-18 09:00 BA1839-A-9	L2174671-10 Soil 26-SEP-18 09:00 BA1839-A-10	
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	20.6	20.0	19.9	21.7	21.6
	pH (1:2 soil:water) (pH)	10.46	10.60	10.74	10.51	10.49
Metals	Aluminum (Al) (mg/kg)	38100	35100	37200	34400	30800
	Antimony (Sb) (mg/kg)	99.4	97.7	91.2	115	92.2
	Arsenic (As) (mg/kg)	21.4	28.4	19.6	21.3	22.8
	Barium (Ba) (mg/kg)	661	711	733	724	627
	Beryllium (Be) (mg/kg)	0.39	0.44	0.42	0.37	0.39
	Bismuth (Bi) (mg/kg)	8.06	6.79	8.95	8.05	6.94
	Boron (B) (mg/kg)	325	265	289	431	250
	Cadmium (Cd) (mg/kg)	11.3	12.9	10.3	11.1	13.1
	Calcium (Ca) (mg/kg)	120000	129000	120000	116000	112000
	Chromium (Cr) (mg/kg)	327	190	174	154	521
	Cobalt (Co) (mg/kg)	74.1	73.4	31.3	266	25.9
	Copper (Cu) (mg/kg)	3220	2820	1740	4570	2040
	Iron (Fe) (mg/kg)	67700	61600	70000	68100	97700
	Lead (Pb) (mg/kg)	3200	676	598	1200	722
	Lithium (Li) (mg/kg)	24.3	21.6	14.7	23.0	13.1
	Magnesium (Mg) (mg/kg)	9830	10100	9860	10200	8760
	Manganese (Mn) (mg/kg)	1000	877	850	1150	1120
	Mercury (Hg) (mg/kg)	<0.050	0.073	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	81.9	88.0	98.3	79.6	147
	Nickel (Ni) (mg/kg)	261	208	323	183	262
	Phosphorus (P) (mg/kg)	11100	12100	9980	10300	9550
	Potassium (K) (mg/kg)	4610	5060	4430	4530	4270
	Selenium (Se) (mg/kg)	0.35	0.36	0.31	0.34	0.34
	Silver (Ag) (mg/kg)	10.2	7.96	9.21	7.00	10.7
	Sodium (Na) (mg/kg)	15500	17300	15500	16100	14200
	Strontium (Sr) (mg/kg)	275	315	298	292	459
	Sulfur (S) (mg/kg)	8400	9800	8600	9000	8200
	Thallium (Tl) (mg/kg)	0.093	0.103	0.123	0.088	0.086
	Tin (Sn) (mg/kg)	129	116	108	172	117
	Titanium (Ti) (mg/kg)	500	522	940	796	811
	Tungsten (W) (mg/kg)	4.81	4.34	3.91	4.74	4.68
	Uranium (U) (mg/kg)	5.52	6.15	5.18	5.25	5.20
	Vanadium (V) (mg/kg)	66.7	72.8	62.7	64.6	96.3
	Zinc (Zn) (mg/kg)	3680	4580	4770	2930	2930
	Zirconium (Zr) (mg/kg)	1.4	1.1	1.3	1.0	1.5

* 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	L2174671-11 Soil 26-SEP-18 09:00 BA1839-A-11	L2174671-12 Soil 26-SEP-18 09:00 BA1839-A-12		
Grouping	Analyte				
SOIL					
Physical Tests	Moisture (%)	20.5	21.2		
	pH (1:2 soil:water) (pH)	10.87	10.58		
Metals	Aluminum (Al) (mg/kg)	34000	28800		
	Antimony (Sb) (mg/kg)	106	109		
	Arsenic (As) (mg/kg)	26.9	27.5		
	Barium (Ba) (mg/kg)	649	652		
	Beryllium (Be) (mg/kg)	0.37	0.42		
	Bismuth (Bi) (mg/kg)	15.6	6.47		
	Boron (B) (mg/kg)	289	288		
	Cadmium (Cd) (mg/kg)	10.2	14.4		
	Calcium (Ca) (mg/kg)	119000	130000		
	Chromium (Cr) (mg/kg)	209	177		
	Cobalt (Co) (mg/kg)	45.8	557		
	Copper (Cu) (mg/kg)	2360	2210		
	Iron (Fe) (mg/kg)	71900	59800		
	Lead (Pb) (mg/kg)	948	735		
	Lithium (Li) (mg/kg)	22.4	24.3		
	Magnesium (Mg) (mg/kg)	10300	10200		
	Manganese (Mn) (mg/kg)	879	1440		
	Mercury (Hg) (mg/kg)	<0.050	0.102		
	Molybdenum (Mo) (mg/kg)	80.1	123		
	Nickel (Ni) (mg/kg)	183	914		
	Phosphorus (P) (mg/kg)	10200	10400		
	Potassium (K) (mg/kg)	4480	4780		
	Selenium (Se) (mg/kg)	0.29	0.45		
	Silver (Ag) (mg/kg)	7.47	14.9		
	Sodium (Na) (mg/kg)	16500	16700		
	Strontium (Sr) (mg/kg)	270	307		
	Sulfur (S) (mg/kg)	8900	9600		
	Thallium (Tl) (mg/kg)	0.082	0.098		
	Tin (Sn) (mg/kg)	129	160		
	Titanium (Ti) (mg/kg)	687	454		
	Tungsten (W) (mg/kg)	11.0	4.47		
	Uranium (U) (mg/kg)	5.56	6.08		
	Vanadium (V) (mg/kg)	64.3	71.2		
	Zinc (Zn) (mg/kg)	3560	5250		
	Zirconium (Zr) (mg/kg)	1.3	1.3		

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2174671-1	L2174671-2	L2174671-3	L2174671-4	L2174671-5
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	26-SEP-18	26-SEP-18	26-SEP-18	26-SEP-18	26-SEP-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1839-A-1	BA1839-A-2	BA1839-A-3	BA1839-A-4	BA1839-A-5
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.29	11.16	11.28	11.24	11.19
	2nd Preliminary pH (pH)		6.65	6.14	6.78	6.68	7.26
	Final pH (pH)		5.90	5.96	6.07	5.94	5.95
	Extraction Solution Initial pH (pH)		2.90	2.90	2.90	2.90	2.90
	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)		5.38	4.11	3.89	3.89	3.97
	Cadmium (Cd)-Leachable (mg/L)		0.180	0.175	0.193	0.170	0.159
	Calcium (Ca)-Leachable (mg/L)		1830	1800	1840	1870	1810
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.294	0.497	0.462	0.210	0.899
	Copper (Cu)-Leachable (mg/L)		2.08	1.98	0.764	2.27	0.892
	Iron (Fe)-Leachable (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Lead (Pb)-Leachable (mg/L)		<0.25	0.30	1.52	1.30	0.33
	Magnesium (Mg)-Leachable (mg/L)		107	104	104	104	102
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.49	0.74	0.56	0.53	0.40
	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)		34.8	38.3	32.9	40.2	29.1

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

11-OCT-18 13:36 (MT)

Version: FINAL

		Sample ID	L2174671-6	L2174671-7	L2174671-8	L2174671-9	L2174671-10
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	26-SEP-18	26-SEP-18	26-SEP-18	26-SEP-18	26-SEP-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1839-A-6	BA1839-A-7	BA1839-A-8	BA1839-A-9	BA1839-A-10
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.20	11.26	11.31	11.10	11.24
	2nd Preliminary pH (pH)		6.78	6.74	6.63	6.73	6.74
	Final pH (pH)		5.74	6.00	6.03	5.53	5.72
	Extraction Solution Initial pH (pH)		2.90	2.90	2.90	2.90	2.90
	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)		4.26	3.76	4.29	4.08	3.74
	Cadmium (Cd)-Leachable (mg/L)		0.249	0.157	0.167	0.191	0.183
	Calcium (Ca)-Leachable (mg/L)		1890	1800	1870	1810	1760
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.276	0.388	0.627	0.332	0.225
	Copper (Cu)-Leachable (mg/L)		2.09	0.635	1.48	1.34	3.33
	Iron (Fe)-Leachable (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Lead (Pb)-Leachable (mg/L)		0.88	0.39	0.94	0.33	0.68
	Magnesium (Mg)-Leachable (mg/L)		111	104	104	105	101
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.76	0.94	0.58	0.60	0.56
	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)		35.0	36.0	43.8	34.9	40.8

* 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	L2174671-11 Soil 26-SEP-18 09:00 BA1839-A-11	L2174671-12 Soil 26-SEP-18 09:00 BA1839-A-12		
Grouping	Analyte				
SOIL					
TCLP Metals	1st Preliminary pH (pH)	11.14	11.27		
	2nd Preliminary pH (pH)	6.34	6.44		
	Final pH (pH)	5.98	5.61		
	Extraction Solution Initial pH (pH)	2.90	2.90		
	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)	4.60	4.08		
	Cadmium (Cd)-Leachable (mg/L)	0.188	0.247		
	Calcium (Ca)-Leachable (mg/L)	1840	1810		
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25		
	Cobalt (Co)-Leachable (mg/L)	0.232	0.990		
	Copper (Cu)-Leachable (mg/L)	0.838	3.98		
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0		
	Lead (Pb)-Leachable (mg/L)	0.38	0.94		
	Magnesium (Mg)-Leachable (mg/L)	106	110		
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010		
	Nickel (Ni)-Leachable (mg/L)	0.60	0.72		
	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)	96.7	66.4		

* 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	Cobalt (Co)	DUP-H	L2174671-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Copper (Cu)	DUP-H	L2174671-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Lead (Pb)	DUP-H	L2174671-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Lithium (Li)	DUP-H	L2174671-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	pH (1:2 soil:water)	DUP-H,J	L2174671-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2174671-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cobalt (Co)-Leachable	MS-B	L2174671-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Copper (Cu)-Leachable	MS-B	L2174671-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Leachable	MS-B	L2174671-1, -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, 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-ICP-VA	Soil	Metals by ICPOES (TCLP)	EPA 1311/6010B
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).			
MOISTURE-VA	Soil	Moisture content	CWS for PHC in Soil - Tier 1
This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six 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

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.

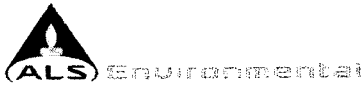
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

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.



L2174671-COFC

COC # _____

Page _____ of _____

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

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

Lab Work Order # (lab use only)		ALS Contact:	Sampler:		MET-TCLP-VA (all metals, Hg)	MOISTURE	Chrome 6	MET-CSR+FULL-VA (all metals)											Number of Containers	
Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type																
	BA1839-A-1	26-Sep-18	9:00	Soil	X	X		X												1
	BA1839-A-2	26-Sep-18	9:00	Soil	X	X		X												1
	BA1839-A-3	26-Sep-18	9:00	Soil	X	X		X												1
	BA1839-A-4	26-Sep-18	9:00	Soil	X	X		X												1
	BA1839-A-5	26-Sep-18	9:00	Soil	X	X		X												1
	BA1839-A-6	26-Sep-18	9:00	Soil	X	X		X												1
	BA1839-A-7	26-Sep-18	9:00	Soil	X	X		X												1
	BA1839-A-8	26-Sep-18	9:00	Soil	X	X		X												1
	BA1839-A-9	26-Sep-18	9:00	Soil	X	X		X												1
	BA1839-A-10	26-Sep-18	9:00	Soil	X	X		X												1
	BA1839-A-11	26-Sep-18	9:00	Soil	X	X		X												1
	BA1839-A-12	26-Sep-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-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
<i>[Signature]</i>	2-Oct-18	08:00	HA	10/2	11:40am	22 °C				