

Bottom Ash Data

2018 Week 16

The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on May 2, 2018. The data represents bottom ash composite results for week 16 of 2018 (April 15, 2018 to April 21, 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: 25-APR-18
Report Date: 01-MAY-18 11:47 (MT)
Version: FINAL

Client Phone: 604-521-1025

Certificate of Analysis

Lab Work Order #: L2084859
Project P.O. #: VANCO-0000047506
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	L2084859-1	L2084859-2	L2084859-3	L2084859-4	L2084859-5
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	18-APR-18	18-APR-18	18-APR-18	18-APR-18	18-APR-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1816-A-1	BA1816-A-2	BA1816-A-3	BA1816-A-4	BA1816-A-5
Grouping	Analyte						
SOIL							
Physical Tests	Moisture (%)		22.1	22.2	23.2	23.2	22.8
	pH (1:2 soil:water) (pH)		11.01	11.00	10.73	10.73	10.77
Metals	Aluminum (Al) (mg/kg)		44800	34500	43700	34900	41700
	Antimony (Sb) (mg/kg)		149	169	189	143	142
	Arsenic (As) (mg/kg)		26.5	30.1	29.8	25.2	29.0
	Barium (Ba) (mg/kg)		572	561	540	564	581
	Beryllium (Be) (mg/kg)		0.39	0.41	0.42	0.35	0.49
	Bismuth (Bi) (mg/kg)		8.73	9.25	9.45	10.2	13.7
	Boron (B) (mg/kg)		366	352	531	326	311
	Cadmium (Cd) (mg/kg)		11.4	11.5	13.5	12.4	27.2
	Calcium (Ca) (mg/kg)		132000	134000	130000	121000	134000
	Chromium (Cr) (mg/kg)		150	673	134	146	143
	Cobalt (Co) (mg/kg)		78.0	33.2	33.7	122	44.4
	Copper (Cu) (mg/kg)		6470	5550	4480	18600	16400
	Iron (Fe) (mg/kg)		57500	70700	60600	76900	67700
	Lead (Pb) (mg/kg)		444	362	2500	382	3660
	Lithium (Li) (mg/kg)		28.2	16.9	17.1	22.9	17.9
	Magnesium (Mg) (mg/kg)		10300	12400	10700	9870	11400
	Manganese (Mn) (mg/kg)		753	1210	788	813	697
	Mercury (Hg) (mg/kg)		<0.050	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)		75.8	104	61.0	72.9	72.6
	Nickel (Ni) (mg/kg)		1200	175	102	108	154
	Phosphorus (P) (mg/kg)		12200	14300	12300	11900	13400
	Potassium (K) (mg/kg)		5890	6260	5750	5790	5910
	Selenium (Se) (mg/kg)		0.50	0.41	0.36	0.38	0.46
	Silver (Ag) (mg/kg)		6.60	4.92	6.52	5.45	7.52
	Sodium (Na) (mg/kg)		16200	16400	17000	15700	15900
	Strontium (Sr) (mg/kg)		280	284	309	283	285
Sulfur (S) (mg/kg)		14100	13900	13600	13900	14200	
Thallium (Tl) (mg/kg)		0.075	0.087	0.073	0.205	0.087	
Tin (Sn) (mg/kg)		144	512	141	152	552	
Titanium (Ti) (mg/kg)		1210	803	806	628	649	
Tungsten (W) (mg/kg)		5.26	8.24	4.84	4.21	4.75	
Uranium (U) (mg/kg)		6.11	6.12	6.02	5.98	6.40	
Vanadium (V) (mg/kg)		55.5	58.6	56.3	53.0	58.6	
Zinc (Zn) (mg/kg)		22900	3890	3630	40800	4380	
Zirconium (Zr) (mg/kg)		2.5	2.0	1.8	1.3	1.6	

* 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	L2084859-6 Soil 18-APR-18 09:00 BA1816-A-6	L2084859-7 Soil 18-APR-18 09:00 BA1816-A-7	L2084859-8 Soil 18-APR-18 09:00 BA1816-A-8	L2084859-9 Soil 18-APR-18 09:00 BA1816-A-9	L2084859-10 Soil 18-APR-18 09:00 BA1816-A-10	
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	20.5	23.0	22.1	19.3	22.8
	pH (1:2 soil:water) (pH)	10.97	10.77	10.63	11.05	11.04
Metals	Aluminum (Al) (mg/kg)	35300	32000	39200	40700	35300
	Antimony (Sb) (mg/kg)	180	136	135	136	146
	Arsenic (As) (mg/kg)	32.0	23.4	25.1	25.3	35.9
	Barium (Ba) (mg/kg)	706	580	557	551	506
	Beryllium (Be) (mg/kg)	0.38	0.40	0.34	0.35	0.38
	Bismuth (Bi) (mg/kg)	11.2	10.3	9.75	10.5	14.2
	Boron (B) (mg/kg)	489	486	269	357	384
	Cadmium (Cd) (mg/kg)	11.7	11.1	11.6	112	13.3
	Calcium (Ca) (mg/kg)	132000	129000	127000	129000	134000
	Chromium (Cr) (mg/kg)	159	148	173	195	218
	Cobalt (Co) (mg/kg)	40.1	22.7	35.6	78.9	22.9
	Copper (Cu) (mg/kg)	11300	23400	1410	3200	1980
	Iron (Fe) (mg/kg)	71900	66900	80500	89300	83300
	Lead (Pb) (mg/kg)	431	769	360	428	650
	Lithium (Li) (mg/kg)	18.7	21.9	17.1	15.3	16.9
	Magnesium (Mg) (mg/kg)	12500	11300	10500	9930	11000
	Manganese (Mn) (mg/kg)	770	705	964	1080	943
	Mercury (Hg) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	250	219	61.8	99.8	91.0
	Nickel (Ni) (mg/kg)	110	119	286	334	158
	Phosphorus (P) (mg/kg)	12400	12600	12700	12000	13700
	Potassium (K) (mg/kg)	5850	6180	5860	5780	5990
	Selenium (Se) (mg/kg)	0.30	0.34	0.37	0.38	0.41
	Silver (Ag) (mg/kg)	4.34	9.95	3.99	3.94	8.85
	Sodium (Na) (mg/kg)	15700	16700	16300	15200	16600
	Strontium (Sr) (mg/kg)	303	306	294	318	316
	Sulfur (S) (mg/kg)	14100	14000	13800	13900	15300
	Thallium (Tl) (mg/kg)	0.073	0.072	0.072	0.074	0.081
	Tin (Sn) (mg/kg)	127	1390	165	718	129
	Titanium (Ti) (mg/kg)	680	632	819	1090	665
	Tungsten (W) (mg/kg)	4.24	5.25	4.63	5.61	8.39
	Uranium (U) (mg/kg)	5.90	5.39	6.31	5.54	6.58
	Vanadium (V) (mg/kg)	50.7	60.6	55.2	52.8	59.2
	Zinc (Zn) (mg/kg)	4070	7340	3000	5720	3460
	Zirconium (Zr) (mg/kg)	1.1	1.0	1.3	2.2	1.2

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2084859-11	L2084859-12		
		Description	Soil	Soil		
		Sampled Date	18-APR-18	18-APR-18		
		Sampled Time	09:00	09:00		
		Client ID	BA1816-A-11	BA1816-A-12		
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)		22.7	22.4		
	pH (1:2 soil:water) (pH)		10.95	11.07		
Metals	Aluminum (Al) (mg/kg)		30200	50900		
	Antimony (Sb) (mg/kg)		129	108		
	Arsenic (As) (mg/kg)		24.3	24.8		
	Barium (Ba) (mg/kg)		464	587		
	Beryllium (Be) (mg/kg)		0.37	0.40		
	Bismuth (Bi) (mg/kg)		9.34	8.57		
	Boron (B) (mg/kg)		321	443		
	Cadmium (Cd) (mg/kg)		11.6	9.24		
	Calcium (Ca) (mg/kg)		131000	113000		
	Chromium (Cr) (mg/kg)		2510	367		
	Cobalt (Co) (mg/kg)		34.9	19.4		
	Copper (Cu) (mg/kg)		1610	7410		
	Iron (Fe) (mg/kg)		74600	85700		
	Lead (Pb) (mg/kg)		295	247		
	Lithium (Li) (mg/kg)		17.3	18.5		
	Magnesium (Mg) (mg/kg)		10300	9170		
	Manganese (Mn) (mg/kg)		1190	1060		
	Mercury (Hg) (mg/kg)		<0.050	<0.050		
	Molybdenum (Mo) (mg/kg)		126	123		
	Nickel (Ni) (mg/kg)		179	252		
	Phosphorus (P) (mg/kg)		12500	10900		
	Potassium (K) (mg/kg)		5640	5350		
	Selenium (Se) (mg/kg)		0.34	0.25		
	Silver (Ag) (mg/kg)		4.55	6.36		
	Sodium (Na) (mg/kg)		15400	13800		
	Strontium (Sr) (mg/kg)		285	261		
	Sulfur (S) (mg/kg)		14000	11200		
	Thallium (Tl) (mg/kg)		0.074	0.067		
	Tin (Sn) (mg/kg)		113	3340		
	Titanium (Ti) (mg/kg)		505	1470		
	Tungsten (W) (mg/kg)		7.21	4.15		
	Uranium (U) (mg/kg)		6.52	5.40		
Vanadium (V) (mg/kg)		64.9	51.2			
Zinc (Zn) (mg/kg)		4740	2670			
Zirconium (Zr) (mg/kg)		1.5	3.2			

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2084859-1	L2084859-2	L2084859-3	L2084859-4	L2084859-5
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	18-APR-18	18-APR-18	18-APR-18	18-APR-18	18-APR-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1816-A-1	BA1816-A-2	BA1816-A-3	BA1816-A-4	BA1816-A-5
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.20	11.29	11.30	11.35	11.37
	2nd Preliminary pH (pH)		9.03	9.11	9.01	9.18	9.13
	Final pH (pH)		6.14	6.37	6.39	6.14	6.07
	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)		4.89	6.68	4.89	4.33	5.36
	Cadmium (Cd)-Leachable (mg/L)		0.135	0.147	0.128	0.153	0.143
	Calcium (Ca)-Leachable (mg/L)		1980	2020	2120	2020	1920
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.908	0.394	0.564	0.735	0.817
	Copper (Cu)-Leachable (mg/L)		0.979	0.725	0.618	1.01	1.54
	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	1.46	0.31
	Magnesium (Mg)-Leachable (mg/L)		127	128	127	133	118
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.51	0.53	0.49	0.60	0.47
	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)		27.6	25.7	19.4	46.1	37.5

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2084859-6	L2084859-7	L2084859-8	L2084859-9	L2084859-10
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	18-APR-18	18-APR-18	18-APR-18	18-APR-18	18-APR-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1816-A-6	BA1816-A-7	BA1816-A-8	BA1816-A-9	BA1816-A-10
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.40	11.47	11.27	11.39	11.45
	2nd Preliminary pH (pH)		9.38	9.36	9.02	9.23	9.08
	Final pH (pH)		6.16	6.47	6.04	6.19	6.18
	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)		5.66	7.81	4.46	6.64	4.84
	Cadmium (Cd)-Leachable (mg/L)		0.141	0.144	0.228	0.239	0.168
	Calcium (Ca)-Leachable (mg/L)		1940	2120	1940	2000	2040
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.455	1.37	0.317	0.491	3.60
	Copper (Cu)-Leachable (mg/L)		0.777	0.843	1.20	0.985	0.762
	Iron (Fe)-Leachable (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Lead (Pb)-Leachable (mg/L)		<0.25	<0.25	0.26	<0.25	<0.25
	Magnesium (Mg)-Leachable (mg/L)		124	132	123	127	134
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.61	0.42	0.72	0.41	0.62
	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)		25.6	22.8	50.4	36.9	27.6

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2084859-11	L2084859-12			
		Description	Soil	Soil			
		Sampled Date	18-APR-18	18-APR-18			
		Sampled Time	09:00	09:00			
		Client ID	BA1816-A-11	BA1816-A-12			
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)	11.14	11.40				
	2nd Preliminary pH (pH)	9.13	9.23				
	Final pH (pH)	6.02	6.12				
	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)	5.42	5.68				
	Cadmium (Cd)-Leachable (mg/L)	0.169	0.368				
	Calcium (Ca)-Leachable (mg/L)	2030	2040				
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25				
	Cobalt (Co)-Leachable (mg/L)	0.479	0.598				
	Copper (Cu)-Leachable (mg/L)	0.913	1.87				
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0				
	Lead (Pb)-Leachable (mg/L)	0.30	<0.25				
	Magnesium (Mg)-Leachable (mg/L)	133	122				
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010				
	Nickel (Ni)-Leachable (mg/L)	0.58	0.48				
	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)	37.2	52.2				

* 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	Chromium (Cr)	DUP-H	L2084859-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Cobalt (Co)	DUP-H	L2084859-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Copper (Cu)	DUP-H	L2084859-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Manganese (Mn)	DUP-H	L2084859-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Tin (Sn)	DUP-H	L2084859-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Tungsten (W)	DUP-H	L2084859-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Zinc (Zn)	DUP-H	L2084859-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cadmium (Cd)-Leachable	MS-B	L2084859-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2084859-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cobalt (Co)-Leachable	MS-B	L2084859-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Leachable	MS-B	L2084859-1, -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)
This method uses a heated strong acid digestion with HNO ₃ 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.			
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.



L2084859-COFC

Chain 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="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		<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT	
Address: 5150 Riverbend Drive		Email 1: smckinney@covanta.com		<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT	
Burnaby BC		Email 2: rjohnson4@covanta.com		<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT	
Phone: 604-521-1025 Fax: <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 ? <input type="checkbox"/> Yes <input type="checkbox"/> No		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 #:		<table border="1"> <tr> <td rowspan="4">MET-TCLP-VA (all metals, Hg)</td> <td rowspan="4">MOISTURE</td> <td rowspan="4">Chrome 6</td> <td rowspan="4">MET-CSR+FULL-VA (all metals)</td> <td colspan="6">Number of Containers</td> </tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>						MET-TCLP-VA (all metals, Hg)	MOISTURE	Chrome 6	MET-CSR+FULL-VA (all metals)	Number of Containers																							
MET-TCLP-VA (all metals, Hg)	MOISTURE	Chrome 6	MET-CSR+FULL-VA (all metals)											Number of Containers																							
Company:		PO / AFE: PO# 46693 Weekly Bottom Ash - Suite																																			
Contact:		LSD: (includes 2:1 pH)																																			
Address:		Quote #:																																			
Phone: Fax:		ALS Contact:		Sampler:																																	

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					
BA1816-A-1		18-Apr-18	9:00	Soil	X	X		X						1
BA1816-A-2		18-Apr-18	9:00	Soil	X	X		X						1
BA1816-A-3		18-Apr-18	9:00	Soil	X	X		X						1
BA1816-A-4		18-Apr-18	9:00	Soil	X	X		X						1
BA1816-A-5		18-Apr-18	9:00	Soil	X	X		X						1
BA1816-A-6		18-Apr-18	9:00	Soil	X	X		X						1
BA1816-A-7		18-Apr-18	9:00	Soil	X	X		X						1
BA1816-A-8		18-Apr-18	9:00	Soil	X	X		X						1
BA1816-A-9		18-Apr-18	9:00	Soil	X	X		X						1
BA1816-A-10		18-Apr-18	9:00	Soil	X	X		X						1
BA1816-A-11		18-Apr-18	9:00	Soil	X	X		X						1
BA1816-A-12		18-Apr-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)			Observations: Yes / No ? If Yes add SIF
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	
<i>[Signature]</i>	25-Apr-18	08:00	JC	4/25/18	12:30pm	20 °C				