

Bottom Ash Data

2018 Week 11

The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on March 29, 2018. The data represents bottom ash composite results for week 11 of 2018 (March 11, 2018 to March 17, 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.



Covanta Burnaby R.E., ULC
ATTN: Steve McKinney
5150 Riverbend Drive
Burnaby BC V3N 4V3

Date Received: 20-MAR-18
Report Date: 27-MAR-18 17:27 (MT)
Version: FINAL

Client Phone: 604-521-1025

Certificate of Analysis

Lab Work Order #: L2069967
Project P.O. #: VANCO-0000047506
Job Reference:
C of C Numbers:
Legal Site Desc:

Brent Mack, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2069967-1	L2069967-2	L2069967-3	L2069967-4	L2069967-5
					SOIL	SOIL	SOIL	SOIL	SOIL
		14-MAR-18	09:00	BA1811-A-1	14-MAR-18	09:00	14-MAR-18	09:00	14-MAR-18
					BA1811-A-1	BA1811-A-2	BA1811-A-3	BA1811-A-4	BA1811-A-5
Grouping	Analyte								
SOIL									
Physical Tests	Moisture (%)	18.8	18.3	18.0	19.7	18.9			
	pH (1:2 soil:water) (pH)	12.30	12.29	12.30	12.30	12.29			
Metals	Aluminum (Al) (mg/kg)	42000	28500	29800	38100	31700			
	Antimony (Sb) (mg/kg)	577	157	156	164	184			
	Arsenic (As) (mg/kg)	49.3	33.0	41.7	39.8	34.8			
	Barium (Ba) (mg/kg)	593	553	561	592	571			
	Beryllium (Be) (mg/kg)	0.44	0.45	0.49	0.42	0.49			
	Bismuth (Bi) (mg/kg)	17.1	14.5	11.8	14.0	50.3			
	Boron (B) (mg/kg)	278	345	373	387	277			
	Cadmium (Cd) (mg/kg)	16.3	15.3	16.8	14.1	14.2			
	Calcium (Ca) (mg/kg)	140000	149000	156000	134000	128000			
	Chromium (Cr) (mg/kg)	137	126	143	131	206			
	Cobalt (Co) (mg/kg)	228	33.1	122	24.3	19.1			
	Copper (Cu) (mg/kg)	2180	2000	2330	3110	3190			
	Iron (Fe) (mg/kg)	52600	42700	61300	50700	62100			
	Lead (Pb) (mg/kg)	14200	338	321	344	297			
	Lithium (Li) (mg/kg)	25.3	15.0	22.8	15.2	26.9			
	Magnesium (Mg) (mg/kg)	10300	11100	11600	12000	10900			
	Manganese (Mn) (mg/kg)	851	708	738	790	664			
	Mercury (Hg) (mg/kg)	1.53	0.087	0.076	0.172	0.065			
	Molybdenum (Mo) (mg/kg)	37.2	38.3	39.6	35.2	43.1			
	Nickel (Ni) (mg/kg)	86.6	70.7	143	108	63.7			
	Phosphorus (P) (mg/kg)	11400	12100	10700	12000	10700			
	Potassium (K) (mg/kg)	5200	5840	5380	5440	5540			
	Selenium (Se) (mg/kg)	0.95	0.49	0.62	0.47	0.46			
	Silver (Ag) (mg/kg)	6.72	5.25	8.30	5.20	5.61			
	Sodium (Na) (mg/kg)	13600	14900	13800	16500	15200			
	Strontium (Sr) (mg/kg)	323	343	338	334	350			
	Sulfur (S) (mg/kg)	13500	14100	14300	13300	12400			
Thallium (Tl) (mg/kg)	0.151	0.072	0.069	0.074	0.065				
Tin (Sn) (mg/kg)	131	124	119	155	124				
Titanium (Ti) (mg/kg)	809	440	478	541	748				
Tungsten (W) (mg/kg)	36.7	28.7	20.0	29.2	26.1				
Uranium (U) (mg/kg)	5.97	6.75	6.44	6.32	6.27				
Vanadium (V) (mg/kg)	54.5	63.0	54.4	57.8	54.1				
Zinc (Zn) (mg/kg)	3860	3300	5370	4310	3020				
Zirconium (Zr) (mg/kg)	1.2	<1.0	<1.0	1.3	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	L2069967-6	L2069967-7	L2069967-8	L2069967-9	L2069967-10
					SOIL	SOIL	SOIL	SOIL	SOIL
		14-MAR-18	09:00	BA1811-A-6	14-MAR-18	14-MAR-18	14-MAR-18	14-MAR-18	14-MAR-18
					09:00	09:00	09:00	09:00	09:00
					BA1811-A-6	BA1811-A-7	BA1811-A-8	BA1811-A-9	BA1811-A-10
Grouping	Analyte								
SOIL									
Physical Tests	Moisture (%)	18.7	18.0	18.7	19.0	18.9			
	pH (1:2 soil:water) (pH)	12.33	12.28	12.25	12.23	12.33			
Metals	Aluminum (Al) (mg/kg)	33800	31000	27900	33500	29800			
	Antimony (Sb) (mg/kg)	162	228	150	175	186			
	Arsenic (As) (mg/kg)	37.0	36.7	36.7	38.9	39.3			
	Barium (Ba) (mg/kg)	493	551	594	544	580			
	Beryllium (Be) (mg/kg)	0.44	0.45	0.48	0.42	0.44			
	Bismuth (Bi) (mg/kg)	14.6	17.2	12.1	13.7	12.0			
	Boron (B) (mg/kg)	342	280	303	336	374			
	Cadmium (Cd) (mg/kg)	16.4	17.8	13.5	16.6	16.2			
	Calcium (Ca) (mg/kg)	138000	147000	138000	158000	140000			
	Chromium (Cr) (mg/kg)	152	167	134	171	147			
	Cobalt (Co) (mg/kg)	26.9	30.1	24.7	61.4	24.4			
	Copper (Cu) (mg/kg)	3850	3000	2880	2950	16200			
	Iron (Fe) (mg/kg)	51400	51300	56800	38700	47300			
	Lead (Pb) (mg/kg)	346	1090	359	492	405			
	Lithium (Li) (mg/kg)	25.1	15.1	16.7	21.0	18.6			
	Magnesium (Mg) (mg/kg)	10100	11000	10200	9590	12600			
	Manganese (Mn) (mg/kg)	786	781	890	694	716			
	Mercury (Hg) (mg/kg)	0.078	0.098	0.084	0.087	0.109			
	Molybdenum (Mo) (mg/kg)	55.9	34.9	31.4	34.8	39.8			
	Nickel (Ni) (mg/kg)	149	93.7	96.7	111	127			
	Phosphorus (P) (mg/kg)	12100	12300	10600	11800	11800			
	Potassium (K) (mg/kg)	5580	5460	5700	5600	5700			
	Selenium (Se) (mg/kg)	0.50	0.59	0.40	0.58	0.54			
	Silver (Ag) (mg/kg)	4.75	5.57	7.66	4.62	5.02			
	Sodium (Na) (mg/kg)	13700	13400	15700	14700	15000			
	Strontium (Sr) (mg/kg)	329	340	377	334	410			
	Sulfur (S) (mg/kg)	13000	15200	12000	15100	14700			
Thallium (Tl) (mg/kg)	0.070	0.076	0.070	0.077	0.083				
Tin (Sn) (mg/kg)	136	287	141	124	538				
Titanium (Ti) (mg/kg)	325	566	505	471	400				
Tungsten (W) (mg/kg)	28.1	33.1	35.9	29.7	29.7				
Uranium (U) (mg/kg)	6.85	6.91	6.49	6.91	6.44				
Vanadium (V) (mg/kg)	58.8	60.1	57.1	57.5	60.6				
Zinc (Zn) (mg/kg)	6020	5300	3940	5710	4110				
Zirconium (Zr) (mg/kg)	1.7	<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	L2069967-11	L2069967-12		
		Description	SOIL	SOIL		
		Sampled Date	14-MAR-18	14-MAR-18		
		Sampled Time	09:00	09:00		
		Client ID	BA1811-A-11	BA1811-A-12		
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	18.9	18.1			
	pH (1:2 soil:water) (pH)	12.31	12.26			
Metals	Aluminum (Al) (mg/kg)	29800	37000			
	Antimony (Sb) (mg/kg)	207	164			
	Arsenic (As) (mg/kg)	41.9	37.9			
	Barium (Ba) (mg/kg)	550	563			
	Beryllium (Be) (mg/kg)	0.42	0.44			
	Bismuth (Bi) (mg/kg)	14.7	18.1			
	Boron (B) (mg/kg)	262	289			
	Cadmium (Cd) (mg/kg)	16.7	19.1			
	Calcium (Ca) (mg/kg)	136000	135000			
	Chromium (Cr) (mg/kg)	129	159			
	Cobalt (Co) (mg/kg)	25.1	56.3			
	Copper (Cu) (mg/kg)	10200	1510			
	Iron (Fe) (mg/kg)	54200	66000			
	Lead (Pb) (mg/kg)	402	337			
	Lithium (Li) (mg/kg)	13.9	15.5			
	Magnesium (Mg) (mg/kg)	10700	9970			
	Manganese (Mn) (mg/kg)	729	797			
	Mercury (Hg) (mg/kg)	0.107	0.096			
	Molybdenum (Mo) (mg/kg)	114	51.3			
	Nickel (Ni) (mg/kg)	88.4	106			
	Phosphorus (P) (mg/kg)	13200	12400			
	Potassium (K) (mg/kg)	5610	5720			
	Selenium (Se) (mg/kg)	0.58	0.56			
	Silver (Ag) (mg/kg)	5.86	6.83			
	Sodium (Na) (mg/kg)	14600	14700			
	Strontium (Sr) (mg/kg)	365	379			
	Sulfur (S) (mg/kg)	15200	15400			
	Thallium (Tl) (mg/kg)	0.079	0.079			
	Tin (Sn) (mg/kg)	156	180			
	Titanium (Ti) (mg/kg)	512	661			
	Tungsten (W) (mg/kg)	38.4	133			
	Uranium (U) (mg/kg)	6.78	6.80			
Vanadium (V) (mg/kg)	58.6	61.0				
Zinc (Zn) (mg/kg)	3730	4300				
Zirconium (Zr) (mg/kg)	<1.0	1.2				

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2069967-1	L2069967-2	L2069967-3	L2069967-4	L2069967-5
		Description	SOIL	SOIL	SOIL	SOIL	SOIL
		Sampled Date	14-MAR-18	14-MAR-18	14-MAR-18	14-MAR-18	14-MAR-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1811-A-1	BA1811-A-2	BA1811-A-3	BA1811-A-4	BA1811-A-5
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.95	12.00	11.99	12.00	11.99
	2nd Preliminary pH (pH)		10.30	10.75	10.15	10.64	10.47
	Final pH (pH)		6.29	6.30	6.49	6.29	6.40
	Extraction Solution Initial pH (pH)		2.87	2.87	2.87	2.87	2.87
	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)		4.18	4.26	4.67	3.89	4.07
	Cadmium (Cd)-Leachable (mg/L)		0.262	0.194	0.223	0.220	0.164
	Calcium (Ca)-Leachable (mg/L)		1910	2000	2020	1930	1930
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.848	0.712	0.428	0.490	0.438
	Copper (Cu)-Leachable (mg/L)		0.706	0.349	0.554	0.772	0.161
	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)		104	113	111	107	108
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.42	0.51	0.39	0.81	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)		39.5	33.6	49.3	32.9	30.1

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2069967-6	L2069967-7	L2069967-8	L2069967-9	L2069967-10
		Description	SOIL	SOIL	SOIL	SOIL	SOIL
		Sampled Date	14-MAR-18	14-MAR-18	14-MAR-18	14-MAR-18	14-MAR-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1811-A-6	BA1811-A-7	BA1811-A-8	BA1811-A-9	BA1811-A-10
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		12.04	12.01	11.99	11.95	12.03
	2nd Preliminary pH (pH)		10.59	10.12	9.95	9.82	9.86
	Final pH (pH)		6.41	6.37	6.52	6.07	6.19
	Extraction Solution Initial pH (pH)		2.87	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)		3.63	4.49	3.98	4.28	5.72
	Cadmium (Cd)-Leachable (mg/L)		0.194	0.218	0.255	0.241	0.166
	Calcium (Ca)-Leachable (mg/L)		1920	2190	2210	2080	2230
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		1.14	0.937	1.03	0.530	1.84
	Copper (Cu)-Leachable (mg/L)		1.18	1.78	1.12	0.922	0.062
	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)		107	124	123	115	128
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.33	0.55	0.46	0.50	0.60
	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)		42.7	45.7	48.8	60.1	47.2

* 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	L2069967-11 SOIL 14-MAR-18 09:00 BA1811-A-11	L2069967-12 SOIL 14-MAR-18 09:00 BA1811-A-12		
Grouping	Analyte				
SOIL					
TCLP Metals	1st Preliminary pH (pH)	12.12	12.04		
	2nd Preliminary pH (pH)	10.31	10.15		
	Final pH (pH)	6.37	6.18		
	Extraction Solution Initial pH (pH)	2.86	2.86		
	Antimony (Sb)-Leachable (mg/L)	1.6	<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)	4.00	3.80		
	Cadmium (Cd)-Leachable (mg/L)	0.159	0.291		
	Calcium (Ca)-Leachable (mg/L)	2210	2200		
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25		
	Cobalt (Co)-Leachable (mg/L)	0.413	0.499		
	Copper (Cu)-Leachable (mg/L)	0.055	1.35		
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0		
	Lead (Pb)-Leachable (mg/L)	1.27	<0.25		
	Magnesium (Mg)-Leachable (mg/L)	121	131		
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010		
	Nickel (Ni)-Leachable (mg/L)	0.59	0.49		
	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)	39.4	41.5		

* 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	L2069967-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Boron (B)	DUP-H	L2069967-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Chromium (Cr)	DUP-H	L2069967-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Iron (Fe)	DUP-H	L2069967-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Lithium (Li)	DUP-H	L2069967-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Nickel (Ni)	DUP-H	L2069967-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Zinc (Zn)	DUP-H	L2069967-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cadmium (Cd)-Leachable	MS-B	L2069967-10, -11, -12, -7, -8, -9
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2069967-10, -11, -12, -7, -8, -9
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2069967-1, -2, -3, -4, -5, -6
Matrix Spike	Cobalt (Co)-Leachable	MS-B	L2069967-10, -11, -12, -7, -8, -9
Matrix Spike	Cobalt (Co)-Leachable	MS-B	L2069967-1, -2, -3, -4, -5, -6
Matrix Spike	Zinc (Zn)-Leachable	MS-B	L2069967-10, -11, -12, -7, -8, -9
Matrix Spike	Zinc (Zn)-Leachable	MS-B	L2069967-1, -2, -3, -4, -5, -6

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

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.



L2069967-COFC

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:				Analysis Request			
	<input type="checkbox"/> Yes <input type="checkbox"/> No	Email 3:	dskrypnik@covanta.com						
			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:									

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								
BA1811-A-1		14-Mar-18	9:00	Soil	X	X				X		1
BA1811-A-2		14-Mar-18	9:00	Soil	X	X				X		1
BA1811-A-3		14-Mar-18	9:00	Soil	X	X				X		1
BA1811-A-4		14-Mar-18	9:00	Soil	X	X				X		1
BA1811-A-5		14-Mar-18	9:00	Soil	X	X				X		1
BA1811-A-6		14-Mar-18	9:00	Soil	X	X				X		1
BA1811-A-7		14-Mar-18	9:00	Soil	X	X				X		1
BA1811-A-8		14-Mar-18	9:00	Soil	X	X				X		1
BA1811-A-9		14-Mar-18	9:00	Soil	X	X				X		1
BA1811-A-10		14-Mar-18	9:00	Soil	X	X				X		1
BA1811-A-11		14-Mar-18	9:00	Soil	X	X				X		1
BA1811-A-12		14-Mar-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>	20-Mar-18	07:30				21 °C	HA	3/20	11:43am	