

Bottom Ash Data

2018 Week 27

The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on July 20, 2018. The data represents bottom ash composite results for week 27 of 2018 (July 1, 2018 to July 7, 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: 10-JUL-18
Report Date: 18-JUL-18 11:54 (MT)
Version: FINAL

Client Phone: 604-521-1025

Certificate of Analysis

Lab Work Order #: L2126516
Project P.O. #: VANCO-0000047506
Job Reference: 46693 WEEKLY BOTTOM ASH - SUITE
C of C Numbers:
Legal Site Desc:

Brent Mack, B.Sc.
Account Manager

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ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2126516-1 Soil 04-JUL-18 09:00 BA1827-A-1	L2126516-2 Soil 04-JUL-18 09:00 BA1827-A-2	L2126516-3 Soil 04-JUL-18 09:00 BA1827-A-3	L2126516-4 Soil 04-JUL-18 09:00 BA1827-A-4	L2126516-5 Soil 04-JUL-18 09:00 BA1827-A-5	
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	17.8	16.7	14.2	17.8	19.1
	pH (1:2 soil:water) (pH)	11.38	11.66	11.94	11.70	11.62
Metals	Aluminum (Al) (mg/kg)	30900	27400	29600	39300	37900
	Antimony (Sb) (mg/kg)	121	121	120	629	100
	Arsenic (As) (mg/kg)	35.6	32.0	36.7	33.4	31.9
	Barium (Ba) (mg/kg)	551	681	554	591	538
	Beryllium (Be) (mg/kg)	0.39	0.35	0.38	0.37	0.41
	Bismuth (Bi) (mg/kg)	6.34	5.62	5.67	5.34	6.04
	Boron (B) (mg/kg)	417	359	228	896	445
	Cadmium (Cd) (mg/kg)	10.6	27.8	12.6	11.3	11.4
	Calcium (Ca) (mg/kg)	115000	130000	123000	115000	112000
	Chromium (Cr) (mg/kg)	139	158	184	146	129
	Cobalt (Co) (mg/kg)	41.4	116	45.6	50.2	92.2
	Copper (Cu) (mg/kg)	7990	44100	3500	3750	1800
	Iron (Fe) (mg/kg)	71300	67200	75200	70200	66700
	Lead (Pb) (mg/kg)	3360	470	605	646	3160
	Lithium (Li) (mg/kg)	16.4	22.2	16.8	18.2	27.4
	Magnesium (Mg) (mg/kg)	9610	13600	10600	9740	9920
	Manganese (Mn) (mg/kg)	1440	672	1090	714	761
	Mercury (Hg) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	18.8	29.4	26.5	25.9	26.2
	Nickel (Ni) (mg/kg)	94.7	511	256	130	144
	Phosphorus (P) (mg/kg)	8890	9840	9480	8370	8980
	Potassium (K) (mg/kg)	5000	5150	4940	4910	4720
	Selenium (Se) (mg/kg)	0.36	0.36	0.33	0.43	0.35
	Silver (Ag) (mg/kg)	4.49	3.52	3.32	7.34	2.81
	Sodium (Na) (mg/kg)	14600	14700	14200	16200	14100
	Strontium (Sr) (mg/kg)	807	308	317	280	276
	Sulfur (S) (mg/kg)	12600	12300	14200	13300	12200
	Thallium (Tl) (mg/kg)	0.062	<0.050	0.056	0.057	0.052
	Tin (Sn) (mg/kg)	109	138	136	5820	103
	Titanium (Ti) (mg/kg)	1010	876	778	1530	1470
	Tungsten (W) (mg/kg)	35.8	3.80	4.18	3.78	5.63
	Uranium (U) (mg/kg)	4.96	4.38	4.72	4.39	4.39
	Vanadium (V) (mg/kg)	48.1	43.3	49.9	47.3	43.8
	Zinc (Zn) (mg/kg)	4350	3820	3380	4030	3440
	Zirconium (Zr) (mg/kg)	1.2	1.1	1.3	1.9	3.3

* 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	L2126516-6 Soil 04-JUL-18 09:00 BA1827-A-6	L2126516-7 Soil 04-JUL-18 09:00 BA1827-A-7	L2126516-8 Soil 04-JUL-18 09:00 BA1827-A-8	L2126516-9 Soil 04-JUL-18 09:00 BA1827-A-9	L2126516-10 Soil 04-JUL-18 09:00 BA1827-A-10	
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	18.7	16.6	17.9	18.2	17.6
	pH (1:2 soil:water) (pH)	11.57	11.86	11.72	11.75	11.66
Metals	Aluminum (Al) (mg/kg)	32600	32600	31100	28900	34000
	Antimony (Sb) (mg/kg)	160	111	152	145	324
	Arsenic (As) (mg/kg)	79.9	44.9	49.5	45.2	43.9
	Barium (Ba) (mg/kg)	525	665	543	556	506
	Beryllium (Be) (mg/kg)	0.37	0.39	0.43	0.39	0.45
	Bismuth (Bi) (mg/kg)	7.40	5.14	12.1	11.3	10.3
	Boron (B) (mg/kg)	459	225	248	210	293
	Cadmium (Cd) (mg/kg)	11.8	11.8	18.5	16.5	13.9
	Calcium (Ca) (mg/kg)	128000	130000	135000	130000	124000
	Chromium (Cr) (mg/kg)	189	161	200	185	126
	Cobalt (Co) (mg/kg)	37.1	43.2	91.0	83.9	37.4
	Copper (Cu) (mg/kg)	4080	3060	3830	3320	1450
	Iron (Fe) (mg/kg)	55100	64700	72700	63800	40100
	Lead (Pb) (mg/kg)	3930	537	769	730	14200
	Lithium (Li) (mg/kg)	16.0	18.2	21.1	19.5	16.5
	Magnesium (Mg) (mg/kg)	13300	12000	11700	10300	11300
	Manganese (Mn) (mg/kg)	1170	862	897	875	661
	Mercury (Hg) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	26.4	29.8	32.7	31.9	43.5
	Nickel (Ni) (mg/kg)	505	92.4	255	232	129
	Phosphorus (P) (mg/kg)	10100	11000	11200	10300	9740
	Potassium (K) (mg/kg)	5260	4990	5130	4810	5060
	Selenium (Se) (mg/kg)	0.37	0.39	0.41	0.40	0.43
	Silver (Ag) (mg/kg)	7.16	3.36	7.02	5.33	11.1
	Sodium (Na) (mg/kg)	16700	14500	14900	13400	14300
	Strontium (Sr) (mg/kg)	309	330	446	445	325
	Sulfur (S) (mg/kg)	13700	13200	13200	12300	13800
	Thallium (Tl) (mg/kg)	0.071	0.063	0.073	0.069	0.084
	Tin (Sn) (mg/kg)	3460	109	642	624	618
	Titanium (Ti) (mg/kg)	824	832	949	915	867
	Tungsten (W) (mg/kg)	3.59	5.10	6.44	6.03	4.68
	Uranium (U) (mg/kg)	4.83	5.70	5.99	5.69	5.50
	Vanadium (V) (mg/kg)	52.1	56.2	56.8	51.4	52.3
	Zinc (Zn) (mg/kg)	4600	4450	4070	3680	4370
	Zirconium (Zr) (mg/kg)	1.4	1.3	1.4	1.5	1.5

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2126516-11	L2126516-12		
		Description	Soil	Soil		
		Sampled Date	04-JUL-18	04-JUL-18		
		Sampled Time	09:00	09:00		
		Client ID	BA1827-A-11	BA1827-A-12		
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	18.6	17.8			
	pH (1:2 soil:water) (pH)	11.50	11.71			
Metals	Aluminum (Al) (mg/kg)	33000	37700			
	Antimony (Sb) (mg/kg)	128	123			
	Arsenic (As) (mg/kg)	48.9	62.6			
	Barium (Ba) (mg/kg)	527	658			
	Beryllium (Be) (mg/kg)	0.38	0.38			
	Bismuth (Bi) (mg/kg)	6.86	5.54			
	Boron (B) (mg/kg)	360	266			
	Cadmium (Cd) (mg/kg)	13.2	11.9			
	Calcium (Ca) (mg/kg)	131000	125000			
	Chromium (Cr) (mg/kg)	169	161			
	Cobalt (Co) (mg/kg)	27.5	28.0			
	Copper (Cu) (mg/kg)	1530	4480			
	Iron (Fe) (mg/kg)	61900	68600			
	Lead (Pb) (mg/kg)	993	460			
	Lithium (Li) (mg/kg)	20.2	18.5			
	Magnesium (Mg) (mg/kg)	10500	11000			
	Manganese (Mn) (mg/kg)	760	917			
	Mercury (Hg) (mg/kg)	<0.050	<0.050			
	Molybdenum (Mo) (mg/kg)	39.8	36.0			
	Nickel (Ni) (mg/kg)	123	378			
	Phosphorus (P) (mg/kg)	10200	9550			
	Potassium (K) (mg/kg)	5090	4690			
	Selenium (Se) (mg/kg)	0.41	0.84			
	Silver (Ag) (mg/kg)	4.13	4.44			
	Sodium (Na) (mg/kg)	14500	13700			
	Strontium (Sr) (mg/kg)	354	311			
	Sulfur (S) (mg/kg)	15200	11800			
	Thallium (Tl) (mg/kg)	0.055	0.063			
	Tin (Sn) (mg/kg)	154	282			
	Titanium (Ti) (mg/kg)	953	958			
	Tungsten (W) (mg/kg)	4.51	5.78			
	Uranium (U) (mg/kg)	5.37	5.59			
Vanadium (V) (mg/kg)	48.2	51.2				
Zinc (Zn) (mg/kg)	4480	3630				
Zirconium (Zr) (mg/kg)	1.8	1.4				

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2126516-1	L2126516-2	L2126516-3	L2126516-4	L2126516-5
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	04-JUL-18	04-JUL-18	04-JUL-18	04-JUL-18	04-JUL-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1827-A-1	BA1827-A-2	BA1827-A-3	BA1827-A-4	BA1827-A-5
Grouping	Analyte						
SOIL							
Speciated Metals	Hexavalent Chromium (mg/kg)		<0.10				
TCLP Metals	1st Preliminary pH (pH)		11.51	11.60	11.48	11.83	11.72
	2nd Preliminary pH (pH)		10.13	10.37	10.60	10.45	10.45
	Final pH (pH)		5.70	5.69	5.91	5.63	5.76
	Extraction Solution Initial pH (pH)		2.85	2.85	2.85	2.85	2.85
	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)		4.79	3.25	3.46	3.53	3.73
	Cadmium (Cd)-Leachable (mg/L)		0.245	0.165	0.181	0.215	0.158
	Calcium (Ca)-Leachable (mg/L)		1780	1790	1880	1770	1840
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.580	1.53	0.465	0.538	0.749
	Copper (Cu)-Leachable (mg/L)		1.96	1.95	1.56	2.05	1.00
	Iron (Fe)-Leachable (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Lead (Pb)-Leachable (mg/L)		0.45	0.46	2.18	<0.25	<0.25
	Magnesium (Mg)-Leachable (mg/L)		103	110	110	105	112
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.43	0.49	0.74	0.43	0.59
	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)		103	44.7	41.2	41.8	80.0

* 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	L2126516-6	L2126516-7	L2126516-8	L2126516-9	L2126516-10											
	Soil	04-JUL-18	09:00	BA1827-A-6	Soil	04-JUL-18	09:00	BA1827-A-7	Soil	04-JUL-18	09:00	BA1827-A-8	Soil	04-JUL-18	09:00	BA1827-A-9	Soil	04-JUL-18	09:00	BA1827-A-10
Grouping	Analyte																			
SOIL																				
Speciated Metals	Hexavalent Chromium (mg/kg)																			
TCLP Metals	1st Preliminary pH (pH)	11.70	11.75	11.76	11.74	11.73														
	2nd Preliminary pH (pH)	10.40	10.63	10.68	10.62	10.61														
	Final pH (pH)	5.61	5.56	5.94	5.78	6.18														
	Extraction Solution Initial pH (pH)	2.85	2.85	2.85	2.85	2.85														
	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)	5.42	2.91	2.61	3.72	4.09														
	Cadmium (Cd)-Leachable (mg/L)	0.184	0.150	0.223	0.178	0.162														
	Calcium (Ca)-Leachable (mg/L)	1740	1740	1860	2000	2000														
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25	<0.25	<0.25	<0.25														
	Cobalt (Co)-Leachable (mg/L)	0.665	0.431	1.51	1.09	0.755														
	Copper (Cu)-Leachable (mg/L)	3.27	2.29	2.37	1.93	1.57														
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0														
	Lead (Pb)-Leachable (mg/L)	<0.25	0.47	<0.25	<0.25	<0.25														
	Magnesium (Mg)-Leachable (mg/L)	104	109	113	119	123														
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010														
	Nickel (Ni)-Leachable (mg/L)	0.42	0.84	0.42	0.69	1.05														
	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)	57.9	47.3	45.3	58.4	37.0														

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2126516-11	L2126516-12			
		Description	Soil	Soil			
		Sampled Date	04-JUL-18	04-JUL-18			
		Sampled Time	09:00	09:00			
		Client ID	BA1827-A-11	BA1827-A-12			
Grouping	Analyte						
SOIL							
Speciated Metals	Hexavalent Chromium (mg/kg)						
TCLP Metals	1st Preliminary pH (pH)	11.71	11.77				
	2nd Preliminary pH (pH)	10.54	10.80				
	Final pH (pH)	5.86	5.50				
	Extraction Solution Initial pH (pH)	2.85	2.85				
	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)	3.75	2.26				
	Cadmium (Cd)-Leachable (mg/L)	0.286	0.058				
	Calcium (Ca)-Leachable (mg/L)	1880	1720				
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25				
	Cobalt (Co)-Leachable (mg/L)	0.342	0.230				
	Copper (Cu)-Leachable (mg/L)	1.91	<0.050				
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0				
	Lead (Pb)-Leachable (mg/L)	<0.25	<0.25				
	Magnesium (Mg)-Leachable (mg/L)	118	100				
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010				
	Nickel (Ni)-Leachable (mg/L)	0.53	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)	42.3	37.8				

* 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	Silver (Ag)	DUP-H	L2126516-8
Duplicate	Bismuth (Bi)	DUP-H	L2126516-10, -11, -12, -7, -8, -9
Duplicate	Cadmium (Cd)	DUP-H	L2126516-10, -11, -12, -7, -8, -9
Duplicate	Cobalt (Co)	DUP-H	L2126516-10, -11, -12, -7, -8, -9
Duplicate	Copper (Cu)	DUP-H	L2126516-10, -11, -12, -7, -8, -9
Duplicate	Nickel (Ni)	DUP-H	L2126516-10, -11, -12, -7, -8, -9
Duplicate	Tin (Sn)	DUP-H	L2126516-10, -11, -12, -7, -8, -9
Duplicate	Titanium (Ti)	DUP-H	L2126516-10, -11, -12, -7, -8, -9
Duplicate	Tungsten (W)	DUP-H	L2126516-10, -11, -12, -7, -8, -9
Duplicate	Zinc (Zn)	DUP-H	L2126516-10, -11, -12, -7, -8, -9
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2126516-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Leachable	MS-B	L2126516-1, -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
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. Analysis is by Collision/Reaction Cell ICPMS.			
CR-CR6-3060-ED	Soil	Chromium, Hexavalent (Cr +6)	APHA 3500-CR C, EPA 3060A ALKALINE
Field moist samples are digested with a sodium hydroxide/sodium carbonate solution. After cooling and filtration, the rinsate is adjusted to pH 9, and injected on an ion chromatograph to separate the hexavalent chromium ion. A post column color reaction with diphenylcarbohydrazide and absorbance measurement at 530 nm completes the quantitation.			
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.			

Reference Information

** 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
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

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		Re:		Service Requested (Rush for routine analysis subject to availability)	
Company:	Covanta Energy	<input type="checkbox"/> Std	<input checked="" type="checkbox"/> 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
Address:	5150 Riverbend Drive Burnaby BC	Email 1:	smckinney@covanta.com	<input type="checkbox"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT	
Phone:	604-521-1025	Email 2:	riohanson4@covanta.com	<input type="checkbox"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT	
Fax:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Email 3:	dskrypnik@covanta.com	<input type="checkbox"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT	
		brent.kirkpatrick@metrovancover.org		Analysis Request	
		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:							

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
BA1827-A-1		04-Jul-18	9:00	Soil	X	X	X	X	1
BA1827-A-2		04-Jul-18	9:00	Soil	X	X		X	1
BA1827-A-3		04-Jul-18	9:00	Soil	X	X		X	1
BA1827-A-4		04-Jul-18	9:00	Soil	X	X		X	1
BA1827-A-5		04-Jul-18	9:00	Soil	X	X		X	1
BA1827-A-6		04-Jul-18	9:00	Soil	X	X		X	1
BA1827-A-7		04-Jul-18	9:00	Soil	X	X		X	1
BA1827-A-8		04-Jul-18	9:00	Soil	X	X		X	1
BA1827-A-9		04-Jul-18	9:00	Soil	X	X		X	1
BA1827-A-10		04-Jul-18	9:00	Soil	X	X		X	1
BA1827-A-11		04-Jul-18	9:00	Soil	X	X		X	1
BA1827-A-12		04-Jul-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>	10-Jul-18	08:00	HA	7/10	12:59	21 °C				