

## Bottom Ash Data

2018 Week 45

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The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on November 21, 2018. The data represents bottom ash composite results for week 45 of 2018 (November 4, 2018 to November 10, 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: 13-NOV-18  
Report Date: 20-NOV-18 18:07 (MT)  
Version: FINAL

Client Phone: 604-521-1025

## Certificate of Analysis

Lab Work Order #: L2195901  
Project P.O. #: VANCO-0000047506  
Job Reference:  
C of C Numbers:  
Legal Site Desc:

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Brent Mack, B.Sc.  
Account Manager

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2195901-1 Soil 07-NOV-18 09:00 BA1845-A-1	L2195901-2 Soil 07-NOV-18 09:00 BA1845-A-2	L2195901-3 Soil 07-NOV-18 09:00 BA1845-A-3	L2195901-4 Soil 07-NOV-18 09:00 BA1845-A-4	L2195901-5 Soil 07-NOV-18 09:00 BA1845-A-5	
Grouping	Analyte					
<b>SOIL</b>						
<b>Physical Tests</b>	Moisture (%)	21.3	20.6	20.5	21.4	21.6
	pH (1:2 soil:water) (pH)	11.85	11.92	11.91	11.72	11.88
<b>Metals</b>	Aluminum (Al) (mg/kg)	36800	26000	38400	40700	28000
	Antimony (Sb) (mg/kg)	193	285	156	157	148
	Arsenic (As) (mg/kg)	34.2	33.7	35.5	30.8	30.7
	Barium (Ba) (mg/kg)	592	599	613	546	619
	Beryllium (Be) (mg/kg)	0.46	0.39	0.45	0.42	0.41
	Bismuth (Bi) (mg/kg)	10.7	10.1	8.68	21.5	8.57
	Boron (B) (mg/kg)	314	229	302	315	263
	Cadmium (Cd) (mg/kg)	15.0	14.9	14.4	20.7	15.3
	Calcium (Ca) (mg/kg)	140000	118000	128000	129000	133000
	Chromium (Cr) (mg/kg)	163	217	154	162	196
	Cobalt (Co) (mg/kg)	41.7	27.9	34.4	38.8	30.2
	Copper (Cu) (mg/kg)	4600	78300	3710	2440	2690
	Iron (Fe) (mg/kg)	74500	49300	65300	48900	70600
	Lead (Pb) (mg/kg)	506	1740	649	441	507
	Lithium (Li) (mg/kg)	19.0	16.1	18.3	19.6	17.1
	Magnesium (Mg) (mg/kg)	12200	10900	11600	12200	11300
	Manganese (Mn) (mg/kg)	1230	995	1570	771	810
	Mercury (Hg) (mg/kg)	0.052	0.060	0.052	0.051	0.074
	Molybdenum (Mo) (mg/kg)	35.7	43.3	31.5	46.6	32.5
	Nickel (Ni) (mg/kg)	416	171	220	110	193
	Phosphorus (P) (mg/kg)	10500	9840	9780	9890	10200
	Potassium (K) (mg/kg)	5890	5520	6150	6130	6050
	Selenium (Se) (mg/kg)	0.46	0.47	0.40	0.48	0.43
	Silver (Ag) (mg/kg)	12.6	4.98	4.68	6.09	6.49
	Sodium (Na) (mg/kg)	15200	14000	16200	15900	15400
	Strontium (Sr) (mg/kg)	344	281	301	334	309
	Sulfur (S) (mg/kg)	14800	13900	13700	14900	14000
	Thallium (Tl) (mg/kg)	0.079	0.063	0.069	0.068	0.071
	Tin (Sn) (mg/kg)	1430	1960	128	334	216
	Titanium (Ti) (mg/kg)	881	769	1040	1030	834
	Tungsten (W) (mg/kg)	13.4	6.65	8.00	11.8	6.19
	Uranium (U) (mg/kg)	5.22	5.21	5.80	5.51	5.03
	Vanadium (V) (mg/kg)	67.3	56.7	63.5	60.1	66.2
	Zinc (Zn) (mg/kg)	4950	3900	4620	4500	3510
	Zirconium (Zr) (mg/kg)	1.2	<1.0	1.2	1.7	1.3

\* 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	L2195901-6 Soil 07-NOV-18 09:00 BA1845-A-6	L2195901-7 Soil 07-NOV-18 09:00 BA1845-A-7	L2195901-8 Soil 07-NOV-18 09:00 BA1845-A-8	L2195901-9 Soil 07-NOV-18 09:00 BA1845-A-9	L2195901-10 Soil 07-NOV-18 09:00 BA1845-A-10	
Grouping	Analyte					
<b>SOIL</b>						
<b>Physical Tests</b>	Moisture (%)	20.1	21.5	21.8	20.7	20.8
	pH (1:2 soil:water) (pH)	11.85	11.77	11.88	11.77	12.02
<b>Metals</b>	Aluminum (Al) (mg/kg)	38000	43800	29900	37200	35400
	Antimony (Sb) (mg/kg)	179	176	213	191	155
	Arsenic (As) (mg/kg)	33.4	30.8	33.1	29.4	35.7
	Barium (Ba) (mg/kg)	591	586	611	644	571
	Beryllium (Be) (mg/kg)	0.42	0.45	0.42	0.43	0.41
	Bismuth (Bi) (mg/kg)	9.65	9.28	9.85	8.92	13.7
	Boron (B) (mg/kg)	225	270	336	326	218
	Cadmium (Cd) (mg/kg)	15.8	14.9	16.3	15.6	13.7
	Calcium (Ca) (mg/kg)	131000	132000	136000	138000	126000
	Chromium (Cr) (mg/kg)	202	174	298	151	297
	Cobalt (Co) (mg/kg)	31.0	32.4	55.9	42.2	26.6
	Copper (Cu) (mg/kg)	5360	16500	6730	1410	6370
	Iron (Fe) (mg/kg)	55400	49700	67900	59500	78700
	Lead (Pb) (mg/kg)	454	619	1670	470	371
	Lithium (Li) (mg/kg)	17.1	19.6	17.2	23.5	18.7
	Magnesium (Mg) (mg/kg)	11200	11200	12000	10600	11600
	Manganese (Mn) (mg/kg)	779	758	937	837	2670
	Mercury (Hg) (mg/kg)	<0.050	0.057	<0.050	0.052	0.051
	Molybdenum (Mo) (mg/kg)	59.4	119	33.1	51.4	52.0
	Nickel (Ni) (mg/kg)	160	118	199	117	219
	Phosphorus (P) (mg/kg)	11500	10700	11500	10900	9490
	Potassium (K) (mg/kg)	6100	5960	6680	6050	5730
	Selenium (Se) (mg/kg)	0.43	0.38	0.48	0.45	0.39
	Silver (Ag) (mg/kg)	4.22	10.0	11.1	4.72	5.54
	Sodium (Na) (mg/kg)	16100	15900	17200	15200	16000
	Strontium (Sr) (mg/kg)	307	289	316	333	298
	Sulfur (S) (mg/kg)	14700	15200	15100	14000	14400
	Thallium (Tl) (mg/kg)	0.069	0.071	0.072	0.067	0.084
	Tin (Sn) (mg/kg)	160	134	367	148	192
	Titanium (Ti) (mg/kg)	821	935	743	904	1010
	Tungsten (W) (mg/kg)	6.72	8.21	6.10	7.37	5.43
	Uranium (U) (mg/kg)	5.42	5.42	5.70	5.42	5.05
	Vanadium (V) (mg/kg)	62.8	74.0	62.1	58.8	53.5
	Zinc (Zn) (mg/kg)	4040	4390	4430	4630	9590
	Zirconium (Zr) (mg/kg)	1.6	1.7	1.1	1.2	1.3

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2195901-11	L2195901-12		
		Description	Soil	Soil		
		Sampled Date	07-NOV-18	07-NOV-18		
		Sampled Time	09:00	09:00		
		Client ID	BA1845-A-11	BA1845-A-12		
Grouping	Analyte					
<b>SOIL</b>						
<b>Physical Tests</b>	Moisture (%)	19.3	21.2			
	pH (1:2 soil:water) (pH)	11.78	11.88			
<b>Metals</b>	Aluminum (Al) (mg/kg)	40200	32700			
	Antimony (Sb) (mg/kg)	203	149			
	Arsenic (As) (mg/kg)	34.3	27.7			
	Barium (Ba) (mg/kg)	519	511			
	Beryllium (Be) (mg/kg)	0.41	0.40			
	Bismuth (Bi) (mg/kg)	8.97	9.61			
	Boron (B) (mg/kg)	241	237			
	Cadmium (Cd) (mg/kg)	20.9	14.1			
	Calcium (Ca) (mg/kg)	133000	123000			
	Chromium (Cr) (mg/kg)	136	133			
	Cobalt (Co) (mg/kg)	20.6	26.2			
	Copper (Cu) (mg/kg)	1660	1960			
	Iron (Fe) (mg/kg)	53000	48500			
	Lead (Pb) (mg/kg)	1410	445			
	Lithium (Li) (mg/kg)	18.7	18.9			
	Magnesium (Mg) (mg/kg)	10700	11200			
	Manganese (Mn) (mg/kg)	762	745			
	Mercury (Hg) (mg/kg)	<0.050	0.058			
	Molybdenum (Mo) (mg/kg)	34.4	31.2			
	Nickel (Ni) (mg/kg)	97.7	90.0			
	Phosphorus (P) (mg/kg)	10000	10700			
	Potassium (K) (mg/kg)	5680	5990			
	Selenium (Se) (mg/kg)	0.55	0.40			
	Silver (Ag) (mg/kg)	9.03	5.26			
	Sodium (Na) (mg/kg)	14000	14900			
	Strontium (Sr) (mg/kg)	327	304			
	Sulfur (S) (mg/kg)	14400	14000			
	Thallium (Tl) (mg/kg)	0.065	0.075			
	Tin (Sn) (mg/kg)	239	193			
	Titanium (Ti) (mg/kg)	1060	724			
	Tungsten (W) (mg/kg)	6.30	5.84			
	Uranium (U) (mg/kg)	5.18	5.48			
Vanadium (V) (mg/kg)	55.3	55.8				
Zinc (Zn) (mg/kg)	3800	4270				
Zirconium (Zr) (mg/kg)	1.5	1.8				

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2195901-1	L2195901-2	L2195901-3	L2195901-4	L2195901-5
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	07-NOV-18	07-NOV-18	07-NOV-18	07-NOV-18	07-NOV-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1845-A-1	BA1845-A-2	BA1845-A-3	BA1845-A-4	BA1845-A-5
Grouping	Analyte						
<b>SOIL</b>							
<b>TCLP Metals</b>	1st Preliminary pH (pH)		11.62	11.66	11.71	11.54	11.58
	2nd Preliminary pH (pH)		8.95	9.68	9.41	8.64	9.17
	Final pH (pH)		6.40	6.34	6.32	6.29	6.33
	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)		2.66	2.67	3.16	2.81	2.97
	Cadmium (Cd)-Leachable (mg/L)		0.147	0.157	0.165	0.166	0.220
	Calcium (Ca)-Leachable (mg/L)		2050	2000	2020	2090	2070
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.419	1.49	1.69	0.409	1.16
	Copper (Cu)-Leachable (mg/L)		0.488	0.984	1.27	0.807	0.814
	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	124	122	129	123
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.38	0.44	0.52	0.37	0.43
	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)		32.0	34.7	43.1	31.4	35.5

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2195901-6	L2195901-7	L2195901-8	L2195901-9	L2195901-10
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	07-NOV-18	07-NOV-18	07-NOV-18	07-NOV-18	07-NOV-18
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1845-A-6	BA1845-A-7	BA1845-A-8	BA1845-A-9	BA1845-A-10
Grouping	Analyte						
<b>SOIL</b>							
<b>TCLP Metals</b>	1st Preliminary pH (pH)		11.65	11.52	11.68	11.70	11.52
	2nd Preliminary pH (pH)		9.33	8.51	10.17	9.48	8.45
	Final pH (pH)		6.23	6.37	6.21	6.30	6.14
	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)		2.65	2.81	2.89	3.06	2.64
	Cadmium (Cd)-Leachable (mg/L)		0.163	0.438	0.207	0.187	0.181
	Calcium (Ca)-Leachable (mg/L)		2020	2100	2120	2110	2020
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.549	0.460	0.454	0.542	1.08
	Copper (Cu)-Leachable (mg/L)		0.966	0.737	0.776	0.820	1.06
	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	132	127	131	120
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.40	0.45	0.45	0.57	0.46
	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)		28.5	47.1	42.9	33.4	49.0

\* 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	L2195901-11 Soil 07-NOV-18 09:00 BA1845-A-11	L2195901-12 Soil 07-NOV-18 09:00 BA1845-A-12		
Grouping	Analyte				
<b>SOIL</b>					
<b>TCLP Metals</b>	1st Preliminary pH (pH)	11.70	11.70		
	2nd Preliminary pH (pH)	9.22	9.44		
	Final pH (pH)	6.42	6.48		
	Extraction Solution Initial pH (pH)	2.87	2.87		
	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)	3.01	2.85		
	Cadmium (Cd)-Leachable (mg/L)	0.191	0.156		
	Calcium (Ca)-Leachable (mg/L)	2070	2060		
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25		
	Cobalt (Co)-Leachable (mg/L)	0.428	0.384		
	Copper (Cu)-Leachable (mg/L)	1.42	1.08		
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0		
	Lead (Pb)-Leachable (mg/L)	<0.25	<0.25		
	Magnesium (Mg)-Leachable (mg/L)	128	128		
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010		
	Nickel (Ni)-Leachable (mg/L)	0.43	0.39		
	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)	43.5	29.7		

\* 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	L2195901-1, -2
Duplicate	Cobalt (Co)	DUP-H	L2195901-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Copper (Cu)	DUP-H	L2195901-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Nickel (Ni)	DUP-H	L2195901-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Tin (Sn)	DUP-H	L2195901-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Tungsten (W)	DUP-H	L2195901-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Zinc (Zn)	DUP-H	L2195901-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2195901-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cobalt (Co)-Leachable	MS-B	L2195901-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Leachable	MS-B	L2195901-1, -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**
<b>AG-200.2-A-CCMS-VA</b>	Soil	Elevated Ag in Soil by CRC ICPMS 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.	EPA 200.2/6020A
<b>HG-200.2-CVAF-VA</b>	Soil	Mercury in Soil by CVAAS 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.	EPA 200.2/1631E (mod)
<b>HG-TCLP-CVAFS-VA</b>	Soil	Mercury by CVAAS (TCLP) 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).	EPA 1311/245.7
<b>MET-200.2-CCMS-VA</b>	Soil	Metals in Soil by CRC ICPMS 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, H <sub>2</sub> S) may be excluded if lost during sampling, storage, or digestion.	EPA 200.2/6020A (mod)
<b>MET-TCLP-ICP-VA</b>	Soil	Metals by ICPOES (TCLP) 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).	EPA 1311/6010B
<b>MOISTURE-VA</b>	Soil	Moisture content This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.	CWS for PHC in Soil - Tier 1
<b>PH-1:2-VA</b>	Soil	pH in Soil (1:2 Soil:Water Extraction) 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.	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL

\*\* 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:

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#### **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.*



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L2195901-COFC

COC #

Page of

<b>Report To</b>		<b>Report Format / Distribution</b>		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 Skrypyk	<input checked="" type="checkbox"/> PDF	<input type="checkbox"/> Excel	<input type="checkbox"/> Digital	<input type="checkbox"/> Fax
Address:	5150 Riverbend Drive	Email 1:	smckinney@covanta.com		
	Burnaby BC	Email 2:	rjohnson4@covanta.com		
Phone:	604-521-1025	Email 3:	dskrypyk@covanta.com		
	<input type="checkbox"/> Yes <input type="checkbox"/> No		brent.kirkpatrick@metrovancoouver.org		
			Sarah.Wellman@metrovancoouver.org		

<b>Invoice To</b>		<b>Client / Project Information</b>		Please indicate below Filtered, Preserved or both (F, P, F/P)	
Same as Report ?		Job #:			
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:					

Lab Work Order # (lab use only)		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
BA1845-A-1		07-Nov-18	9:00	Soil	X	X		X													1
BA1845-A-2		07-Nov-18	9:00	Soil	X	X		X													1
BA1845-A-3		07-Nov-18	9:00	Soil	X	X		X													1
BA1845-A-4		07-Nov-18	9:00	Soil	X	X		X													1
BA1845-A-5		07-Nov-18	9:00	Soil	X	X		X													1
BA1845-A-6		07-Nov-18	9:00	Soil	X	X		X													1
BA1845-A-7		07-Nov-18	9:00	Soil	X	X		X													1
BA1845-A-8		07-Nov-18	9:00	Soil	X	X		X													1
BA1845-A-9		07-Nov-18	9:00	Soil	X	X		X													1
BA1845-A-10		07-Nov-18	9:00	Soil	X	X		X													1
BA1845-A-11		07-Nov-18	9:00	Soil	X	X		X													1
BA1845-A-12		07-Nov-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:
<i>[Signature]</i>	13-Nov-18	08:00	HA	11/13	12:00	19.0C				Yes / No ? If Yes add SIF