

Bottom Ash Data

2020 Week 31

The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on August 20, 2020. The data represents bottom ash composite results for week 31 of 2020 (July 26, 2020 to August 1, 2020).

The bottom ash meets the requirements of Metro Vancouver's Bottom Ash Management Plan and is suitable for disposal.



CERTIFICATE OF ANALYSIS

Work Order : **VA20B1825**
Client : **Covanta Burnaby Renewable Energy, ULC**
Contact : Steve McKinney
Address : 5150 Riverbend Drive
Burnaby BC Canada V3N 4V3
Telephone : 604 521 1025
Project : ----
PO : VANCO 0000049378
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : Standing Offer (BC work)
No. of samples received : 16
No. of samples analysed : 16

Page : 1 of 11
Laboratory : Vancouver - Environmental
Account Manager : Brent Mack
Address : 8081 Lougheed Highway
Burnaby BC Canada V5A 1W9
Telephone : +1 604 253 4188
Date Samples Received : 04-Aug-2020 12:05
Date Analysis Commenced : 05-Aug-2020
Issue Date : 19-Aug-2020 23:43

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Aaron Yu	Laboratory Analyst	Metals, Burnaby, British Columbia
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Brieanna Allen	Department Manager - Organics	Organics, Burnaby, British Columbia
Cristina Alexandre	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Ophelia Chiu	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
%	percent
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior 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.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.



Analytical Results

Sub-Matrix: Soil

Client sample ID

(Matrix: Soil/Solid)

					BA2031-A-1	BA2031-A-2	BA2031-A-3	BA2031-A-4	BA2031-A-5
Client sampling date / time					29-Jul-2020 09:00	29-Jul-2020 09:00	29-Jul-2020 09:00	29-Jul-2020 09:00	29-Jul-2020 09:00
Analyte	CAS Number	Method	LOR	Unit	VA20B1825-001	VA20B1825-002	VA20B1825-003	VA20B1825-004	VA20B1825-005
					Result	Result	Result	Result	Result
Physical Tests									
moisture	----	E144	0.25	%	17.8	18.1	17.7	18.0	16.6
pH (1:2 soil:water)	----	E108	0.10	pH units	10.9	10.9	10.8	11.0	11.0
Metals									
aluminum	7429-90-5	E440	50	mg/kg	28600	30500	45700	33300	32100
antimony	7440-36-0	E440	0.10	mg/kg	110	104	126	134	102
arsenic	7440-38-2	E440	0.10	mg/kg	28.8	25.6	26.7	45.8	30.0
barium	7440-39-3	E440	0.50	mg/kg	485	480	453	494	520
beryllium	7440-41-7	E440	0.10	mg/kg	0.36	0.37	0.37	0.34	0.38
bismuth	7440-69-9	E440	0.20	mg/kg	6.33	5.55	5.87	7.79	17.0
boron	7440-42-8	E440	5.0	mg/kg	145	161	157	146	225
cadmium	7440-43-9	E440	0.020	mg/kg	14.8	15.0	14.9	23.4	14.5
calcium	7440-70-2	E440	50	mg/kg	109000	111000	116000	111000	103000
chromium	7440-47-3	E440	0.50	mg/kg	238	141	177	142	118
cobalt	7440-48-4	E440	0.10	mg/kg	43.6	27.4	23.8	75.1	388
copper	7440-50-8	E440	0.50	mg/kg	1860	1610	12200	24400	29700
iron	7439-89-6	E440	50	mg/kg	71500	68800	68500	67200	73700
lead	7439-92-1	E440	0.50	mg/kg	353	1600	335	530	309
lithium	7439-93-2	E440	2.0	mg/kg	16.8	17.9	16.5	16.0	35.8
magnesium	7439-95-4	E440	20	mg/kg	9900	10400	10500	10600	10800
manganese	7439-96-5	E440	1.0	mg/kg	721	697	912	935	726
mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	<0.0500	<0.0500	0.0539
molybdenum	7439-98-7	E440	0.10	mg/kg	18.9	21.2	20.0	30.2	23.7
nickel	7440-02-0	E440	0.50	mg/kg	154	161	172	1600	190
phosphorus	7723-14-0	E440	50	mg/kg	11100	10200	10100	10600	9000
potassium	7440-09-7	E440	100	mg/kg	5570	5380	5270	5340	4960
selenium	7782-49-2	E440	0.20	mg/kg	0.37	0.38	0.35	0.89	0.44
silver	7440-22-4	E440.Ag	0.10	mg/kg	----	----	----	----	7.66
silver	7440-22-4	E440	0.10	mg/kg	4.38	10.4	4.28	10.9	----
sodium	7440-23-5	E440	50	mg/kg	13800	14100	14200	13400	13800
strontium	7440-24-6	E440	0.50	mg/kg	289	300	254	245	224
sulfur	7704-34-9	E440	1000	mg/kg	12200	12300	13700	12100	11200



Analytical Results

Sub-Matrix: Soil					Client sample ID	BA2031-A-1	BA2031-A-2	BA2031-A-3	BA2031-A-4	BA2031-A-5
(Matrix: Soil/Solid)					Client sampling date / time	29-Jul-2020 09:00	29-Jul-2020 09:00	29-Jul-2020 09:00	29-Jul-2020 09:00	29-Jul-2020 09:00
Analyte	CAS Number	Method	LOR	Unit	VA20B1825-001	VA20B1825-002	VA20B1825-003	VA20B1825-004	VA20B1825-005	
					Result	Result	Result	Result	Result	
Metals										
thallium	7440-28-0	E440	0.050	mg/kg	0.060	0.076	0.066	0.072	0.068	
tin	7440-31-5	E440	2.0	mg/kg	107	389	844	298	132	
titanium	7440-32-6	E440	1.0	mg/kg	314	551	834	894	917	
tungsten	7440-33-7	E440	0.50	mg/kg	9.74	8.87	7.63	6.84	9.24	
uranium	7440-61-1	E440	0.050	mg/kg	4.18	4.21	4.12	4.34	3.51	
vanadium	7440-62-2	E440	0.20	mg/kg	41.7	43.6	44.5	44.6	43.8	
zinc	7440-66-6	E440	2.0	mg/kg	3600	5920	5270	12900	12100	
zirconium	7440-67-7	E440	1.0	mg/kg	1.6	1.1	1.7	1.3	<1.0	
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444	0.010	pH units	11.3	11.4	11.3	11.3	11.3	
pH, TCLP 2nd preliminary	----	EPP444	0.010	pH units	7.68	8.41	7.85	9.89	9.71	
pH, TCLP extraction fluid initial	----	EPP444	0.010	pH units	2.88	2.88	2.88	2.88	2.88	
pH, TCLP final	----	EPP444	0.010	pH units	6.21	6.18	6.11	6.24	6.11	
antimony, TCLP	7440-36-0	E444	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
arsenic, TCLP	7440-38-2	E444	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	<2.5	<2.5	<2.5	<2.5	
beryllium, TCLP	7440-41-7	E444	0.025	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	
boron, TCLP	7440-42-8	E444	0.50	mg/L	2.32	2.29	2.23	2.36	2.28	
cadmium, TCLP	7440-43-9	E444	0.050	mg/L	0.280	0.274	0.327	0.338	0.287	
calcium, TCLP	7440-70-2	E444	10	mg/L	2110	2130	2110	2220	2140	
chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25	
cobalt, TCLP	7440-48-4	E444	0.050	mg/L	1.41	0.884	0.615	0.673	1.29	
copper, TCLP	7440-50-8	E444	0.050	mg/L	1.04	1.04	0.833	0.880	1.21	
iron, TCLP	7439-89-6	E444	5.0	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	
lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25	
magnesium, TCLP	7439-95-4	E444	2.5	mg/L	153	146	134	149	138	
mercury, TCLP	7439-97-6	E512	0.0100	mg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	
nickel, TCLP	7440-02-0	E444	0.25	mg/L	0.58	1.28	0.60	0.55	0.73	
selenium, TCLP	7782-49-2	E444	1.00	mg/L	<1.00	<1.00	<1.00	<1.00	<1.00	
silver, TCLP	7440-22-4	E444	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
thallium, TCLP	7440-28-0	E444	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	<0.15	<0.15	<0.15	<0.15	



Analytical Results

Sub-Matrix: Soil					Client sample ID	BA2031-A-1	BA2031-A-2	BA2031-A-3	BA2031-A-4	BA2031-A-5
(Matrix: Soil/Solid)										
					Client sampling date / time	29-Jul-2020 09:00	29-Jul-2020 09:00	29-Jul-2020 09:00	29-Jul-2020 09:00	29-Jul-2020 09:00
Analyte	CAS Number	Method	LOR	Unit	VA20B1825-001	VA20B1825-002	VA20B1825-003	VA20B1825-004	VA20B1825-005	
					Result	Result	Result	Result	Result	
TCLP Metals										
zinc, TCLP	7440-66-6	E444	0.50	mg/L	41.6	36.8	39.4	43.8	40.2	

Please refer to the General Comments section for an explanation of any qualifiers detected.



Analytical Results

Sub-Matrix: Soil

Client sample ID

(Matrix: Soil/Solid)

					BA2031-A-6	BA2031-A-7	BA2031-A-8	BA2031-A-9	BA2031-A-10
Client sampling date / time					29-Jul-2020 09:00	29-Jul-2020 09:00	29-Jul-2020 09:00	29-Jul-2020 09:00	29-Jul-2020 09:00
Analyte	CAS Number	Method	LOR	Unit	VA20B1825-006	VA20B1825-007	VA20B1825-008	VA20B1825-009	VA20B1825-010
					Result	Result	Result	Result	Result
Physical Tests									
moisture	----	E144	0.25	%	16.5	17.6	17.0	17.4	16.6
pH (1:2 soil:water)	----	E108	0.10	pH units	10.8	10.8	10.8	10.8	10.8
Metals									
aluminum	7429-90-5	E440	50	mg/kg	44200	39400	36400	40700	34500
antimony	7440-36-0	E440	0.10	mg/kg	134	134	112	150	112
arsenic	7440-38-2	E440	0.10	mg/kg	30.5	28.9	28.5	28.3	25.5
barium	7440-39-3	E440	0.50	mg/kg	516	471	528	529	557
beryllium	7440-41-7	E440	0.10	mg/kg	0.40	0.33	0.40	0.36	0.38
bismuth	7440-69-9	E440	0.20	mg/kg	7.42	6.84	8.22	7.00	5.65
boron	7440-42-8	E440	5.0	mg/kg	218	207	239	222	326
cadmium	7440-43-9	E440	0.020	mg/kg	14.5	15.5	15.4	19.1	14.6
calcium	7440-70-2	E440	50	mg/kg	104000	109000	115000	109000	118000
chromium	7440-47-3	E440	0.50	mg/kg	165	337	137	129	190
cobalt	7440-48-4	E440	0.10	mg/kg	34.7	33.1	57.7	21.7	33.2
copper	7440-50-8	E440	0.50	mg/kg	13000	2260	1350	4020	2230
iron	7439-89-6	E440	50	mg/kg	59800	74800	71000	55700	76500
lead	7439-92-1	E440	0.50	mg/kg	543	1040	342	288	289
lithium	7439-93-2	E440	2.0	mg/kg	20.1	19.1	18.2	16.6	40.0
magnesium	7439-95-4	E440	20	mg/kg	9950	10000	10600	12100	11300
manganese	7439-96-5	E440	1.0	mg/kg	736	992	751	670	853
mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	0.0732	<0.0500	<0.0500
molybdenum	7439-98-7	E440	0.10	mg/kg	19.8	60.0	19.9	18.9	20.3
nickel	7440-02-0	E440	0.50	mg/kg	233	351	150	115	145
phosphorus	7723-14-0	E440	50	mg/kg	10100	11900	10200	10400	9790
potassium	7440-09-7	E440	100	mg/kg	5170	5550	5780	5190	5250
selenium	7782-49-2	E440	0.20	mg/kg	0.42	0.38	0.42	0.39	0.39
silver	7440-22-4	E440	0.10	mg/kg	4.87	5.20	4.11	9.08	5.19
sodium	7440-23-5	E440	50	mg/kg	14200	15000	14700	13600	14600
strontium	7440-24-6	E440	0.50	mg/kg	244	244	266	268	261
sulfur	7704-34-9	E440	1000	mg/kg	12700	13000	12900	12400	12200
thallium	7440-28-0	E440	0.050	mg/kg	0.070	0.069	0.066	0.066	0.062
tin	7440-31-5	E440	2.0	mg/kg	167	176	136	105	93.4



Analytical Results

Sub-Matrix: Soil

Client sample ID

					BA2031-A-6	BA2031-A-7	BA2031-A-8	BA2031-A-9	BA2031-A-10
(Matrix: Soil/Solid)									
Client sampling date / time					29-Jul-2020 09:00	29-Jul-2020 09:00	29-Jul-2020 09:00	29-Jul-2020 09:00	29-Jul-2020 09:00
Analyte	CAS Number	Method	LOR	Unit	VA20B1825-006	VA20B1825-007	VA20B1825-008	VA20B1825-009	VA20B1825-010
					Result	Result	Result	Result	Result
Metals									
titanium	7440-32-6	E440	1.0	mg/kg	975	495	559	646	656
tungsten	7440-33-7	E440	0.50	mg/kg	10.1	7.62	7.66	6.36	9.65
uranium	7440-61-1	E440	0.050	mg/kg	3.95	4.29	4.17	4.34	4.23
vanadium	7440-62-2	E440	0.20	mg/kg	40.7	45.4	47.9	41.8	43.2
zinc	7440-66-6	E440	2.0	mg/kg	3960	5540	3780	3800	3460
zirconium	7440-67-7	E440	1.0	mg/kg	1.3	1.8	1.2	1.5	1.1
TCLP Metals									
pH, TCLP 1st preliminary	----	EPP444	0.010	pH units	11.3	11.3	11.4	11.4	11.3
pH, TCLP 2nd preliminary	----	EPP444	0.010	pH units	9.60	9.83	9.85	9.78	9.56
pH, TCLP extraction fluid initial	----	EPP444	0.010	pH units	2.88	2.88	2.88	2.88	2.88
pH, TCLP final	----	EPP444	0.010	pH units	6.08	6.08	6.07	6.02	5.87
antimony, TCLP	7440-36-0	E444	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
arsenic, TCLP	7440-38-2	E444	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	<2.5	<2.5	<2.5	<2.5
beryllium, TCLP	7440-41-7	E444	0.025	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025
boron, TCLP	7440-42-8	E444	0.50	mg/L	2.35	2.52	2.27	2.42	2.50
cadmium, TCLP	7440-43-9	E444	0.050	mg/L	0.433	0.263	0.363	0.318	0.611
calcium, TCLP	7440-70-2	E444	10	mg/L	2080	2100	2060	2200	2040
chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25
cobalt, TCLP	7440-48-4	E444	0.050	mg/L	1.38	1.04	0.999	0.842	0.910
copper, TCLP	7440-50-8	E444	0.050	mg/L	1.23	1.36	1.15	1.15	1.37
iron, TCLP	7439-89-6	E444	5.0	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0
lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25
magnesium, TCLP	7439-95-4	E444	2.5	mg/L	133	132	139	155	139
mercury, TCLP	7439-97-6	E512	0.0100	mg/L	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
nickel, TCLP	7440-02-0	E444	0.25	mg/L	0.84	0.72	0.56	0.50	1.02
selenium, TCLP	7782-49-2	E444	1.00	mg/L	<1.00	<1.00	<1.00	<1.00	<1.00
silver, TCLP	7440-22-4	E444	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
thallium, TCLP	7440-28-0	E444	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	<0.15	<0.15	<0.15	<0.15
zinc, TCLP	7440-66-6	E444	0.50	mg/L	60.1	43.9	38.6	46.5	84.1



Please refer to the General Comments section for an explanation of any qualifiers detected.



Analytical Results

Sub-Matrix: Soil

Client sample ID

(Matrix: Soil/Solid)

					BA2031-A-11	BA2031-A-12	BA2031-A-10 REP 1	BA2031-A-10 REP 2	BA2031-A-10 REP 3
Client sampling date / time					29-Jul-2020 09:00	29-Jul-2020 09:00	29-Jul-2020 09:00	29-Jul-2020 09:00	29-Jul-2020 09:00
Analyte	CAS Number	Method	LOR	Unit	VA20B1825-011	VA20B1825-012	VA20B1825-013	VA20B1825-014	VA20B1825-015
					Result	Result	Result	Result	Result
Physical Tests									
moisture	----	E144	0.25	%	18.7	17.5	----	----	----
pH (1:2 soil:water)	----	E108	0.10	pH units	11.2	10.8	----	----	----
Metals									
aluminum	7429-90-5	E440	50	mg/kg	38900	39200	----	----	----
antimony	7440-36-0	E440	0.10	mg/kg	114	136	----	----	----
arsenic	7440-38-2	E440	0.10	mg/kg	26.3	30.6	----	----	----
barium	7440-39-3	E440	0.50	mg/kg	492	400	----	----	----
beryllium	7440-41-7	E440	0.10	mg/kg	0.41	0.37	----	----	----
bismuth	7440-69-9	E440	0.20	mg/kg	6.16	8.16	----	----	----
boron	7440-42-8	E440	5.0	mg/kg	202	161	----	----	----
cadmium	7440-43-9	E440	0.020	mg/kg	14.1	16.6	----	----	----
calcium	7440-70-2	E440	50	mg/kg	111000	116000	----	----	----
chromium	7440-47-3	E440	0.50	mg/kg	189	145	----	----	----
cobalt	7440-48-4	E440	0.10	mg/kg	203	47.4	----	----	----
copper	7440-50-8	E440	0.50	mg/kg	5500	2160	----	----	----
iron	7439-89-6	E440	50	mg/kg	61700	65400	----	----	----
lead	7439-92-1	E440	0.50	mg/kg	3700	340	----	----	----
lithium	7439-93-2	E440	2.0	mg/kg	22.2	18.3	----	----	----
magnesium	7439-95-4	E440	20	mg/kg	10100	10800	----	----	----
manganese	7439-96-5	E440	1.0	mg/kg	778	792	----	----	----
mercury	7439-97-6	E510	0.0500	mg/kg	0.0726	<0.0500	----	----	----
molybdenum	7439-98-7	E440	0.10	mg/kg	20.9	20.2	----	----	----
nickel	7440-02-0	E440	0.50	mg/kg	169	177	----	----	----
phosphorus	7723-14-0	E440	50	mg/kg	10700	11300	----	----	----
potassium	7440-09-7	E440	100	mg/kg	5440	5670	----	----	----
selenium	7782-49-2	E440	0.20	mg/kg	0.38	0.39	----	----	----
silver	7440-22-4	E440	0.10	mg/kg	19.9	6.23	----	----	----
sodium	7440-23-5	E440	50	mg/kg	14400	14400	----	----	----
strontium	7440-24-6	E440	0.50	mg/kg	282	264	----	----	----
sulfur	7704-34-9	E440	1000	mg/kg	11800	13600	----	----	----
thallium	7440-28-0	E440	0.050	mg/kg	0.122	0.067	----	----	----
tin	7440-31-5	E440	2.0	mg/kg	109	137	----	----	----



Analytical Results

Sub-Matrix: Soil

Client sample ID

(Matrix: Soil/Solid)

					BA2031-A-11	BA2031-A-12	BA2031-A-10 REP 1	BA2031-A-10 REP 2	BA2031-A-10 REP 3
Client sampling date / time					29-Jul-2020 09:00	29-Jul-2020 09:00	29-Jul-2020 09:00	29-Jul-2020 09:00	29-Jul-2020 09:00
Analyte	CAS Number	Method	LOR	Unit	VA20B1825-011	VA20B1825-012	VA20B1825-013	VA20B1825-014	VA20B1825-015
					Result	Result	Result	Result	Result
Metals									
titanium	7440-32-6	E440	1.0	mg/kg	607	404	----	----	----
tungsten	7440-33-7	E440	0.50	mg/kg	7.32	12.0	----	----	----
uranium	7440-61-1	E440	0.050	mg/kg	4.37	4.62	----	----	----
vanadium	7440-62-2	E440	0.20	mg/kg	43.4	45.6	----	----	----
zinc	7440-66-6	E440	2.0	mg/kg	5070	5220	----	----	----
zirconium	7440-67-7	E440	1.0	mg/kg	1.4	1.8	----	----	----
TCLP Metals									
pH, TCLP 1st preliminary	----	EPP444	0.010	pH units	11.4	11.3	11.3	11.3	11.3
pH, TCLP 2nd preliminary	----	EPP444	0.010	pH units	9.95	9.98	9.56	9.56	9.56
pH, TCLP extraction fluid initial	----	EPP444	0.010	pH units	2.88	2.88	2.92	2.92	2.92
pH, TCLP final	----	EPP444	0.010	pH units	6.29	6.04	5.88	5.81	5.85
antimony, TCLP	7440-36-0	E444	1.0	mg/L	<1.0	<1.0	----	----	----
arsenic, TCLP	7440-38-2	E444	1.0	mg/L	<1.0	<1.0	----	----	----
barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	<2.5	----	----	----
beryllium, TCLP	7440-41-7	E444	0.025	mg/L	<0.025	<0.025	----	----	----
boron, TCLP	7440-42-8	E444	0.50	mg/L	2.42	2.25	----	----	----
cadmium, TCLP	7440-43-9	E444	0.050	mg/L	0.517	0.294	0.294	0.357	0.321
calcium, TCLP	7440-70-2	E444	10	mg/L	2250	2100	----	----	----
chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	<0.25	----	----	----
cobalt, TCLP	7440-48-4	E444	0.050	mg/L	0.665	0.881	----	----	----
copper, TCLP	7440-50-8	E444	0.050	mg/L	1.32	1.18	----	----	----
iron, TCLP	7439-89-6	E444	5.0	mg/L	<5.0	<5.0	----	----	----
lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	<0.25	----	----	----
magnesium, TCLP	7439-95-4	E444	2.5	mg/L	145	152	----	----	----
mercury, TCLP	7439-97-6	E512	0.0100	mg/L	<0.0100	<0.0100	----	----	----
nickel, TCLP	7440-02-0	E444	0.25	mg/L	0.64	0.58	----	----	----
selenium, TCLP	7782-49-2	E444	1.00	mg/L	<1.00	<1.00	----	----	----
silver, TCLP	7440-22-4	E444	0.050	mg/L	<0.050	<0.050	----	----	----
thallium, TCLP	7440-28-0	E444	1.0	mg/L	<1.0	<1.0	----	----	----
vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	<0.15	----	----	----
zinc, TCLP	7440-66-6	E444	0.50	mg/L	40.9	46.3	----	----	----



Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: Soil

Client sample ID

					BA2031-A-10 REP 4	----	----	----	----
					29-Jul-2020 09:00	----	----	----	----
<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	VA20B1825-016	-----	-----	-----	-----
					Result	---	---	---	---
TCLP Metals									
pH, TCLP 1st preliminary	----	EPP444	0.010	pH units	11.3	----	----	----	----
pH, TCLP 2nd preliminary	----	EPP444	0.010	pH units	9.56	----	----	----	----
pH, TCLP extraction fluid initial	----	EPP444	0.010	pH units	2.92	----	----	----	----
pH, TCLP final	----	EPP444	0.010	pH units	5.87	----	----	----	----
cadmium, TCLP	7440-43-9	E444	0.050	mg/L	0.355	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA20B1825	Page	: 1 of 17
Client	: Covanta Burnaby Renewable Energy, ULC	Laboratory	: Vancouver - Environmental
Contact	: Steve McKinney	Account Manager	: Brent Mack
Address	: 5150 Riverbend Drive Burnaby BC Canada V3N 4V3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 521 1025	Telephone	: +1 604 253 4188
Project	: ----	Date Samples Received	: 04-Aug-2020 12:05
PO	: VANCO 0000049378	Issue Date	: 19-Aug-2020 23:43
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: Standing Offer (BC work)		
No. of samples received	: 16		
No. of samples analysed	: 16		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Soil/Solid**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Duplicate (DUP) RPDs								
Metals	VA20B1825-012	BA2031-A-12	copper	7440-50-8	E440	67.8 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.

Result Qualifiers

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 is used for calculation purposes.

Matrix: **Soil/Solid**

Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Metals : High Silver in Soil/Solid by CRC ICPMS											
LDPE bag BA2031-A-5	E440.Ag	29-Jul-2020	10-Aug-2020	180 days	12 days	✓	10-Aug-2020	167 days	0 days	✓	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2031-A-1	E510	29-Jul-2020	08-Aug-2020	28 days	9 days	✓	08-Aug-2020	18 days	0 days	✓	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2031-A-10	E510	29-Jul-2020	08-Aug-2020	28 days	9 days	✓	08-Aug-2020	18 days	0 days	✓	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2031-A-11	E510	29-Jul-2020	08-Aug-2020	28 days	9 days	✓	08-Aug-2020	18 days	0 days	✓	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2031-A-12	E510	29-Jul-2020	08-Aug-2020	28 days	9 days	✓	08-Aug-2020	18 days	0 days	✓	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2031-A-2	E510	29-Jul-2020	08-Aug-2020	28 days	9 days	✓	08-Aug-2020	18 days	0 days	✓	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2031-A-3	E510	29-Jul-2020	08-Aug-2020	28 days	9 days	✓	08-Aug-2020	18 days	0 days	✓	



Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2031-A-4	E510	29-Jul-2020	08-Aug-2020	28 days	9 days	✔	08-Aug-2020	18 days	0 days	✔	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2031-A-5	E510	29-Jul-2020	08-Aug-2020	28 days	9 days	✔	08-Aug-2020	18 days	0 days	✔	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2031-A-6	E510	29-Jul-2020	08-Aug-2020	28 days	9 days	✔	08-Aug-2020	18 days	0 days	✔	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2031-A-7	E510	29-Jul-2020	08-Aug-2020	28 days	9 days	✔	08-Aug-2020	18 days	0 days	✔	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2031-A-8	E510	29-Jul-2020	08-Aug-2020	28 days	9 days	✔	08-Aug-2020	18 days	0 days	✔	
Metals : Mercury in Soil/Solid by CVAAS											
LDPE bag BA2031-A-9	E510	29-Jul-2020	08-Aug-2020	28 days	9 days	✔	08-Aug-2020	18 days	0 days	✔	
Metals : Metals in Soil/Solid by CRC ICPMS											
LDPE bag BA2031-A-1	E440	29-Jul-2020	08-Aug-2020	180 days	9 days	✔	08-Aug-2020	170 days	0 days	✔	
Metals : Metals in Soil/Solid by CRC ICPMS											
LDPE bag BA2031-A-10	E440	29-Jul-2020	08-Aug-2020	180 days	9 days	✔	08-Aug-2020	170 days	0 days	✔	
Metals : Metals in Soil/Solid by CRC ICPMS											
LDPE bag BA2031-A-11	E440	29-Jul-2020	08-Aug-2020	180 days	9 days	✔	08-Aug-2020	170 days	0 days	✔	



Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2031-A-2	E440	29-Jul-2020	08-Aug-2020	180 days	9 days	✔	08-Aug-2020	170 days	0 days	✔	
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2031-A-3	E440	29-Jul-2020	08-Aug-2020	180 days	9 days	✔	08-Aug-2020	170 days	0 days	✔	
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2031-A-4	E440	29-Jul-2020	08-Aug-2020	180 days	9 days	✔	08-Aug-2020	170 days	0 days	✔	
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2031-A-5	E440	29-Jul-2020	08-Aug-2020	180 days	9 days	✔	08-Aug-2020	170 days	0 days	✔	
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2031-A-6	E440	29-Jul-2020	08-Aug-2020	180 days	9 days	✔	08-Aug-2020	170 days	0 days	✔	
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2031-A-7	E440	29-Jul-2020	08-Aug-2020	180 days	9 days	✔	08-Aug-2020	170 days	0 days	✔	
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2031-A-8	E440	29-Jul-2020	08-Aug-2020	180 days	9 days	✔	08-Aug-2020	170 days	0 days	✔	
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2031-A-9	E440	29-Jul-2020	08-Aug-2020	180 days	9 days	✔	08-Aug-2020	170 days	0 days	✔	
Metals : Metals in Soil/Solid by CRC ICPCS											
LDPE bag BA2031-A-12	E440	29-Jul-2020	08-Aug-2020	180 days	9 days	✔	08-Aug-2020	170 days	3 days	✔	



Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2031-A-1	E144	29-Jul-2020	----	----	----		07-Aug-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2031-A-10	E144	29-Jul-2020	----	----	----		07-Aug-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2031-A-11	E144	29-Jul-2020	----	----	----		07-Aug-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2031-A-12	E144	29-Jul-2020	----	----	----		07-Aug-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2031-A-2	E144	29-Jul-2020	----	----	----		07-Aug-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2031-A-3	E144	29-Jul-2020	----	----	----		07-Aug-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2031-A-4	E144	29-Jul-2020	----	----	----		07-Aug-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2031-A-5	E144	29-Jul-2020	----	----	----		07-Aug-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag BA2031-A-6	E144	29-Jul-2020	----	----	----		07-Aug-2020	----	----	



Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Physical Tests : Moisture Content by Gravimetry											
LDPE bag BA2031-A-7	E144	29-Jul-2020	----	----	----		07-Aug-2020	----	----		
Physical Tests : Moisture Content by Gravimetry											
LDPE bag BA2031-A-8	E144	29-Jul-2020	----	----	----		07-Aug-2020	----	----		
Physical Tests : Moisture Content by Gravimetry											
LDPE bag BA2031-A-9	E144	29-Jul-2020	----	----	----		07-Aug-2020	----	----		
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2031-A-1	E108	29-Jul-2020	08-Aug-2020	30 days	9 days	✔	08-Aug-2020	20 days	0 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2031-A-10	E108	29-Jul-2020	08-Aug-2020	30 days	9 days	✔	08-Aug-2020	20 days	0 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2031-A-11	E108	29-Jul-2020	08-Aug-2020	30 days	9 days	✔	08-Aug-2020	20 days	0 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2031-A-12	E108	29-Jul-2020	08-Aug-2020	30 days	9 days	✔	08-Aug-2020	20 days	0 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2031-A-2	E108	29-Jul-2020	08-Aug-2020	30 days	9 days	✔	08-Aug-2020	20 days	0 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2031-A-3	E108	29-Jul-2020	08-Aug-2020	30 days	9 days	✔	08-Aug-2020	20 days	0 days	✔	



Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2031-A-4	E108	29-Jul-2020	08-Aug-2020	30 days	9 days	✔	08-Aug-2020	20 days	0 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2031-A-5	E108	29-Jul-2020	08-Aug-2020	30 days	9 days	✔	08-Aug-2020	20 days	0 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2031-A-6	E108	29-Jul-2020	08-Aug-2020	30 days	9 days	✔	08-Aug-2020	20 days	0 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2031-A-7	E108	29-Jul-2020	08-Aug-2020	30 days	9 days	✔	08-Aug-2020	20 days	0 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2031-A-8	E108	29-Jul-2020	08-Aug-2020	30 days	9 days	✔	08-Aug-2020	20 days	0 days	✔	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
LDPE bag BA2031-A-9	E108	29-Jul-2020	08-Aug-2020	30 days	9 days	✔	08-Aug-2020	20 days	0 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2031-A-1	E512	05-Aug-2020	----	----	----		10-Aug-2020	0 days	0 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2031-A-10	E512	05-Aug-2020	----	----	----		10-Aug-2020	0 days	0 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2031-A-11	E512	05-Aug-2020	----	----	----		10-Aug-2020	0 days	0 days	✔	



Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2031-A-12	E512	05-Aug-2020	----	----	----		10-Aug-2020	0 days	0 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2031-A-2	E512	05-Aug-2020	----	----	----		10-Aug-2020	0 days	0 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2031-A-3	E512	05-Aug-2020	----	----	----		10-Aug-2020	0 days	0 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2031-A-4	E512	05-Aug-2020	----	----	----		10-Aug-2020	0 days	0 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2031-A-5	E512	05-Aug-2020	----	----	----		10-Aug-2020	0 days	0 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2031-A-6	E512	05-Aug-2020	----	----	----		10-Aug-2020	0 days	0 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2031-A-7	E512	05-Aug-2020	----	----	----		10-Aug-2020	0 days	0 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2031-A-8	E512	05-Aug-2020	----	----	----		10-Aug-2020	0 days	0 days	✔	
TCLP Metals : Mercury by CVAAS (TCLP)											
Glass vial - total (lab preserved) BA2031-A-9	E512	05-Aug-2020	----	----	----		10-Aug-2020	0 days	0 days	✔	



Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2031-A-1	E444	05-Aug-2020	----	----	----		10-Aug-2020	187 days	12 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2031-A-10	E444	05-Aug-2020	----	----	----		10-Aug-2020	187 days	12 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2031-A-11	E444	05-Aug-2020	----	----	----		10-Aug-2020	187 days	12 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2031-A-12	E444	05-Aug-2020	----	----	----		10-Aug-2020	187 days	12 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2031-A-2	E444	05-Aug-2020	----	----	----		10-Aug-2020	187 days	12 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2031-A-3	E444	05-Aug-2020	----	----	----		10-Aug-2020	187 days	12 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2031-A-4	E444	05-Aug-2020	----	----	----		10-Aug-2020	187 days	12 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2031-A-5	E444	05-Aug-2020	----	----	----		10-Aug-2020	187 days	12 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2031-A-6	E444	05-Aug-2020	----	----	----		10-Aug-2020	187 days	12 days	✔	



Matrix: Soil/Solid

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2031-A-7	E444	05-Aug-2020	----	----	----		10-Aug-2020	187 days	12 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2031-A-8	E444	05-Aug-2020	----	----	----		10-Aug-2020	187 days	12 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2031-A-9	E444	05-Aug-2020	----	----	----		10-Aug-2020	187 days	12 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2031-A-10 REP 1	E444	15-Aug-2020	----	----	----		19-Aug-2020	196 days	21 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2031-A-10 REP 2	E444	15-Aug-2020	----	----	----		19-Aug-2020	196 days	21 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2031-A-10 REP 3	E444	15-Aug-2020	----	----	----		19-Aug-2020	196 days	21 days	✔	
TCLP Metals : Metals by CRC ICPMS (TCLP)											
HDPE - total (lab preserved) BA2031-A-10 REP 4	E444	15-Aug-2020	----	----	----		19-Aug-2020	196 days	21 days	✔	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2031-A-1	EPP444	29-Jul-2020	05-Aug-2020	----	----		----	----	----		
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2031-A-10	EPP444	29-Jul-2020	05-Aug-2020	----	----		----	----	----		



Matrix: **Soil/Solid**

Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 14 day HT (e.g. SV Organics) BA2031-A-10 REP 1	EPP444	29-Jul-2020	15-Aug-2020	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 14 day HT (e.g. SV Organics) BA2031-A-10 REP 2	EPP444	29-Jul-2020	15-Aug-2020	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 14 day HT (e.g. SV Organics) BA2031-A-10 REP 3	EPP444	29-Jul-2020	15-Aug-2020	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 14 day HT (e.g. SV Organics) BA2031-A-10 REP 4	EPP444	29-Jul-2020	15-Aug-2020	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2031-A-11	EPP444	29-Jul-2020	05-Aug-2020	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2031-A-12	EPP444	29-Jul-2020	05-Aug-2020	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2031-A-2	EPP444	29-Jul-2020	05-Aug-2020	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2031-A-3	EPP444	29-Jul-2020	05-Aug-2020	----	----		----	----	----	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2031-A-4	EPP444	29-Jul-2020	05-Aug-2020	----	----		----	----	----	



Matrix: **Soil/Solid**

Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2031-A-5	EPP444	29-Jul-2020	05-Aug-2020	----	----		----	----	----		
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2031-A-6	EPP444	29-Jul-2020	05-Aug-2020	----	----		----	----	----		
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2031-A-7	EPP444	29-Jul-2020	05-Aug-2020	----	----		----	----	----		
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2031-A-8	EPP444	29-Jul-2020	05-Aug-2020	----	----		----	----	----		
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)											
Lab Split - Non-Volatile Leach: 180 Day HT (e.g. metals ex. Hg) BA2031-A-9	EPP444	29-Jul-2020	05-Aug-2020	----	----		----	----	----		

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Soil/Solid**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
Analytical Methods							
Laboratory Duplicates (DUP)							
Mercury in Soil/Solid by CVAAS	E510	69090	1	20	5.0	5.0	✔
Metals in Soil/Solid by CRC ICPMS	E440	69091	2	20	10.0	5.0	✔
Moisture Content by Gravimetry	E144	69095	1	20	5.0	5.0	✔
pH by Meter (1:2 Soil:Water Extraction)	E108	69092	1	20	5.0	5.0	✔
Laboratory Control Samples (LCS)							
High Silver in Soil/Solid by CRC ICPMS	E440.Ag	70086	2	1	200.0	5.0	✔
Mercury in Soil/Solid by CVAAS	E510	69090	2	20	10.0	10.0	✔
Metals in Soil/Solid by CRC ICPMS	E440	69091	2	20	10.0	10.0	✔
Moisture Content by Gravimetry	E144	69095	1	20	5.0	5.0	✔
pH by Meter (1:2 Soil:Water Extraction)	E108	69092	1	20	5.0	5.0	✔
Method Blanks (MB)							
High Silver in Soil/Solid by CRC ICPMS	E440.Ag	70086	1	1	100.0	5.0	✔
Mercury by CVAAS (TCLP)	E512	69852	1	12	8.3	5.0	✔
Mercury in Soil/Solid by CVAAS	E510	69090	1	20	5.0	5.0	✔
Metals by CRC ICPMS (TCLP)	E444	73894	2	16	12.5	5.0	✔
Metals in Soil/Solid by CRC ICPMS	E440	69091	1	20	5.0	5.0	✔
Moisture Content by Gravimetry	E144	69095	1	20	5.0	5.0	✔
Matrix Spikes (MS)							
Mercury by CVAAS (TCLP)	E512	69852	1	12	8.3	5.0	✔
Metals by CRC ICPMS (TCLP)	E444	73894	2	16	12.5	5.0	✔



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter (1:2 Soil:Water Extraction)	E108 Vancouver - Environmental	Soil/Solid	BC Lab Manual	pH is determined by potentiometric measurement with a pH electrode at ambient laboratory temperature (normally 20 ± 5°C), and is carried out in accordance with procedures described in the BC Lab Manual (prescriptive method). The procedure involves mixing the dried (at <60 °C) and sieved (10mesh/2mm) sample with ultra pure water at a 1:2 ratio of sediment to water. The pH is then measured by a standard pH probe.
Moisture Content by Gravimetry	E144 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Metals in Soil/Solid by CRC ICPMS	E440 Vancouver - Environmental	Soil/Solid	EPA 6020B (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO ₃ and HCl. This method 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.
High Silver in Soil/Solid by CRC ICPMS	E440.Ag Vancouver - Environmental	Soil/Solid	EPA 6020B (mod)	Samples are sieved through a 2 mm sieve, and digested with HNO ₃ and HCl. This method 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.
Metals by CRC ICPMS (TCLP)	E444 Vancouver - Environmental	Soil/Solid	EPA 1311/6020B (mod)	An extract produced by the Toxicity Characteristic Leachate Procedure (TCLP) as per EPA 1311 is analyzed by Collision/Reaction Cell ICPMS.
Mercury in Soil/Solid by CVAAS	E510 Vancouver - Environmental	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO ₃ and HCl, followed by CVAAS analysis.
Mercury by CVAAS (TCLP)	E512 Vancouver - Environmental	Soil/Solid	SW 846 -1311/245.1 CVAA ON TCLP LEACHATE	An extract produced by the Toxicity Characteristic Leachate Procedure (TCLP) as per EPA 1311 is analyzed by CVAAS.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH	EP108 Vancouver - Environmental	Soil/Solid	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL	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.



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Digestion for Metals and Mercury	EP440 Vancouver - Environmental	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO ₃ and HCl. This method is intended to liberate metals that may be environmentally available.
Digestion for Silver	EP440.Ag Vancouver - Environmental	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO ₃ and HCl. This method is intended to liberate metals that may be environmentally available.
TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)	EPP444 Vancouver - Environmental	Soil/Solid	EPA 1311	Preparation of a Toxicity Characteristic Leaching Procedure (TCLP) solid sample involves particle size reduction, homogenization, then determination of appropriate extraction fluid. A measured portion of fresh subsample is placed in an extraction bottle with the appropriate extraction fluid then tumbled in a rotary extractor for 18+/- 2 hours at 23 +/- 2 C. The liquid leachate is filtered to separate from solids then bottled and prepared for analytical tests.



QUALITY CONTROL REPORT

Work Order : VA20B1825

Page : 1 of 13

Client : Covanta Burnaby Renewable Energy, ULC
Contact : Steve McKinney
Address : 5150 Riverbend Drive
Burnaby BC Canada V3N 4V3
Telephone : 604 521 1025
Project : ----
PO : VANCO 0000049378
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : Standing Offer (BC work)
No. of samples received : 16
No. of samples analysed : 16

Laboratory : Vancouver - Environmental
Account Manager : Brent Mack
Address : 8081 Lougheed Highway
Burnaby, British Columbia Canada V5A 1W9
Telephone : +1 604 253 4188
Date Samples Received : 04-Aug-2020 12:05
Date Analysis Commenced : 05-Aug-2020
Issue Date : 19-Aug-2020 23:43

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
● Matrix Spike (MS) Report; Recovery and Acceptance Limits
● Reference Material (RM) Report; Recovery and Acceptance Limits
● Method Blank (MB) Report; Recovery and Acceptance Limits
● Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Table with 3 columns: Signatories, Position, Laboratory Department. Rows include Aaron Yu (Laboratory Analyst, Metals), Angela Ren (Team Leader - Metals, Metals), Brieanna Allen (Department Manager - Organics, Organics), Cristina Alexandre (Supervisor - Metals ICP Instrumentation, Metals), Kinny Wu (Lab Analyst, Metals), Ophelia Chiu (Supervisor - Organics Instrumentation, Organics), Robin Weeks (Team Leader - Metals, Metals).

Page : 2 of 13
Work Order : VA20B1825
Client : Covanta Burnaby Renewable Energy, ULC
Project : ----



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

= Indicates a QC result that did not meet the ALS DQO.



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: Soil/Solid

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 69092)											
VA20B1825-012	BA2031-A-12	pH (1:2 soil:water)	----	E108	0.10	pH units	10.8	10.9	0.552%	5%	----
Physical Tests (QC Lot: 69095)											
VA20B1659-001	Anonymous	moisture	----	E144	0.25	%	19.8	18.9	4.50%	20%	----
Metals (QC Lot: 69090)											
VA20B1825-012	BA2031-A-12	mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	0	Diff <2x LOR	----
Metals (QC Lot: 69091)											
VA20B1825-012	BA2031-A-12	copper	7440-50-8	E440	0.50	mg/kg	2160	4370	67.8%	30%	DUP-H
		tungsten	7440-33-7	E440	0.50	mg/kg	12.0	8.93	29.2%	30%	----
VA20B1825-012	BA2031-A-12	aluminum	7429-90-5	E440	50	mg/kg	39200	33900	14.6%	40%	----
		antimony	7440-36-0	E440	0.10	mg/kg	136	137	0.883%	30%	----
		arsenic	7440-38-2	E440	0.10	mg/kg	30.6	31.8	3.89%	30%	----
		barium	7440-39-3	E440	0.50	mg/kg	400	479	18.0%	40%	----
		beryllium	7440-41-7	E440	0.10	mg/kg	0.37	0.38	0.007	Diff <2x LOR	----
		bismuth	7440-69-9	E440	0.20	mg/kg	8.16	7.54	7.84%	30%	----
		boron	7440-42-8	E440	5.0	mg/kg	161	183	12.8%	30%	----
		cadmium	7440-43-9	E440	0.020	mg/kg	16.6	19.0	13.1%	30%	----
		calcium	7440-70-2	E440	50	mg/kg	116000	118000	1.26%	30%	----
		chromium	7440-47-3	E440	0.50	mg/kg	145	142	2.45%	30%	----
		cobalt	7440-48-4	E440	0.10	mg/kg	47.4	49.5	4.45%	30%	----
		iron	7439-89-6	E440	50	mg/kg	65400	64300	1.75%	30%	----
		lead	7439-92-1	E440	0.50	mg/kg	340	410	18.6%	40%	----
		lithium	7439-93-2	E440	2.0	mg/kg	18.3	17.6	3.88%	30%	----
		magnesium	7439-95-4	E440	20	mg/kg	10800	10600	1.41%	30%	----
		manganese	7439-96-5	E440	1.0	mg/kg	792	730	8.13%	30%	----
		molybdenum	7439-98-7	E440	0.10	mg/kg	20.2	22.4	10.2%	40%	----
		nickel	7440-02-0	E440	0.50	mg/kg	177	176	0.609%	30%	----
		phosphorus	7723-14-0	E440	50	mg/kg	11300	11000	2.42%	30%	----
		potassium	7440-09-7	E440	100	mg/kg	5670	5800	2.23%	40%	----
		selenium	7782-49-2	E440	0.20	mg/kg	0.39	0.45	0.06	Diff <2x LOR	----
		silver	7440-22-4	E440	0.10	mg/kg	6.23	6.87	9.66%	40%	----
		sodium	7440-23-5	E440	50	mg/kg	14400	14300	0.864%	40%	----
		strontium	7440-24-6	E440	0.50	mg/kg	264	270	2.13%	40%	----



Sub-Matrix: **Soil/Solid**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Metals (QC Lot: 69091) - continued											
VA20B1825-012	BA2031-A-12	sulfur	7704-34-9	E440	1000	mg/kg	13600	13900	2.23%	30%	----
		thallium	7440-28-0	E440	0.050	mg/kg	0.067	0.071	0.004	Diff <2x LOR	----
		tin	7440-31-5	E440	2.0	mg/kg	137	127	7.33%	40%	----
		titanium	7440-32-6	E440	1.0	mg/kg	404	435	7.44%	40%	----
		uranium	7440-61-1	E440	0.050	mg/kg	4.62	4.40	4.79%	30%	----
		vanadium	7440-62-2	E440	0.20	mg/kg	45.6	43.6	4.54%	30%	----
		zinc	7440-66-6	E440	2.0	mg/kg	5220	5290	1.32%	30%	----
		zirconium	7440-67-7	E440	1.0	mg/kg	1.8	1.3	0.5	Diff <2x LOR	----

Qualifiers

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 69095)						
moisture	----	E144	0.25	%	<0.25	----
Metals (QCLot: 69090)						
mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 69091)						
aluminum	7429-90-5	E440	50	mg/kg	<50	----
antimony	7440-36-0	E440	0.1	mg/kg	<0.10	----
arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	----
barium	7440-39-3	E440	0.5	mg/kg	<0.50	----
beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	----
bismuth	7440-69-9	E440	0.2	mg/kg	<0.20	----
boron	7440-42-8	E440	5	mg/kg	<5.0	----
cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	----
calcium	7440-70-2	E440	50	mg/kg	<50	----
chromium	7440-47-3	E440	0.5	mg/kg	<0.50	----
cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	----
copper	7440-50-8	E440	0.5	mg/kg	<0.50	----
iron	7439-89-6	E440	50	mg/kg	<50	----
lead	7439-92-1	E440	0.5	mg/kg	<0.50	----
lithium	7439-93-2	E440	2	mg/kg	<2.0	----
magnesium	7439-95-4	E440	20	mg/kg	<20	----
manganese	7439-96-5	E440	1	mg/kg	<1.0	----
molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	----
nickel	7440-02-0	E440	0.5	mg/kg	<0.50	----
phosphorus	7723-14-0	E440	50	mg/kg	<50	----
potassium	7440-09-7	E440	100	mg/kg	<100	----
selenium	7782-49-2	E440	0.2	mg/kg	<0.20	----
silver	7440-22-4	E440	0.1	mg/kg	<0.10	----
sodium	7440-23-5	E440	50	mg/kg	<50	----
strontium	7440-24-6	E440	0.5	mg/kg	<0.50	----
sulfur	7704-34-9	E440	1000	mg/kg	<1000	----
thallium	7440-28-0	E440	0.05	mg/kg	<0.050	----
tin	7440-31-5	E440	2	mg/kg	<2.0	----
titanium	7440-32-6	E440	1	mg/kg	<1.0	----



Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 69091) - continued						
tungsten	7440-33-7	E440	0.5	mg/kg	<0.50	----
uranium	7440-61-1	E440	0.05	mg/kg	<0.050	----
vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	----
zinc	7440-66-6	E440	2	mg/kg	<2.0	----
zirconium	7440-67-7	E440	1	mg/kg	<1.0	----
Metals (QCLot: 70086)						
silver	7440-22-4	E440.Ag	0.1	mg/kg	<0.10	----
TCLP Metals (QCLot: 69851)						
antimony, TCLP	7440-36-0	E444	1	mg/L	<1.0	----
arsenic, TCLP	7440-38-2	E444	1	mg/L	<1.0	----
barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	----
beryllium, TCLP	7440-41-7	E444	0.025	mg/L	<0.025	----
boron, TCLP	7440-42-8	E444	0.5	mg/L	<0.50	----
cadmium, TCLP	7440-43-9	E444	0.05	mg/L	<0.050	----
calcium, TCLP	7440-70-2	E444	10	mg/L	<10	----
chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	----
cobalt, TCLP	7440-48-4	E444	0.05	mg/L	<0.050	----
copper, TCLP	7440-50-8	E444	0.05	mg/L	<0.050	----
iron, TCLP	7439-89-6	E444	5	mg/L	<5.0	----
lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	----
magnesium, TCLP	7439-95-4	E444	2.5	mg/L	<2.5	----
nickel, TCLP	7440-02-0	E444	0.25	mg/L	<0.25	----
selenium, TCLP	7782-49-2	E444	0.1	mg/L	<0.10	----
silver, TCLP	7440-22-4	E444	0.05	mg/L	<0.050	----
thallium, TCLP	7440-28-0	E444	1	mg/L	<1.0	----
vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	----
zinc, TCLP	7440-66-6	E444	0.5	mg/L	<0.50	----
TCLP Metals (QCLot: 69852)						
mercury, TCLP	7439-97-6	E512	0.001	mg/L	<0.0010	----
TCLP Metals (QCLot: 73894)						
antimony, TCLP	7440-36-0	E444	1	mg/L	<1.0	----
arsenic, TCLP	7440-38-2	E444	1	mg/L	<1.0	----
barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	----
beryllium, TCLP	7440-41-7	E444	0.025	mg/L	<0.025	----
boron, TCLP	7440-42-8	E444	0.5	mg/L	<0.50	----
cadmium, TCLP	7440-43-9	E444	0.05	mg/L	<0.050	----



Sub-Matrix: **Soil/Solid**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
TCLP Metals (QCLot: 73894) - continued						
calcium, TCLP	7440-70-2	E444	10	mg/L	<10	----
chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	----
cobalt, TCLP	7440-48-4	E444	0.05	mg/L	<0.050	----
copper, TCLP	7440-50-8	E444	0.05	mg/L	<0.050	----
iron, TCLP	7439-89-6	E444	5	mg/L	<5.0	----
lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	----
magnesium, TCLP	7439-95-4	E444	2.5	mg/L	<2.5	----
nickel, TCLP	7440-02-0	E444	0.25	mg/L	<0.25	----
selenium, TCLP	7782-49-2	E444	0.1	mg/L	<0.10	----
silver, TCLP	7440-22-4	E444	0.05	mg/L	<0.050	----
thallium, TCLP	7440-28-0	E444	1	mg/L	<1.0	----
vanadium, TCLP	7440-62-2	E444	0.15	mg/L	<0.15	----
zinc, TCLP	7440-66-6	E444	0.5	mg/L	<0.50	----



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Physical Tests (QCLot: 69092)									
pH (1:2 soil:water)	----	E108	----	pH units	6 pH units	101	95.0	105	----
Physical Tests (QCLot: 69095)									
moisture	----	E144	0.25	%	50 %	98.0	90.0	110	----
Metals (QCLot: 69090)									
mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	104	80.0	120	----
Metals (QCLot: 69091)									
aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	109	80.0	120	----
antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	105	80.0	120	----
arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	106	80.0	120	----
barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	102	80.0	120	----
beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	101	80.0	120	----
bismuth	7440-69-9	E440	0.2	mg/kg	100 mg/kg	102	80.0	120	----
boron	7440-42-8	E440	5	mg/kg	100 mg/kg	101	80.0	120	----
cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	107	80.0	120	----
calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	98.8	80.0	120	----
chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	107	80.0	120	----
cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	106	80.0	120	----
copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	106	80.0	120	----
iron	7439-89-6	E440	50	mg/kg	100 mg/kg	106	80.0	120	----
lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	96.6	80.0	120	----
lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	105	80.0	120	----
magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	108	80.0	120	----
manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	104	80.0	120	----
molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	98.8	80.0	120	----
nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	107	80.0	120	----
phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	108	80.0	120	----
potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	108	80.0	120	----
selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	108	80.0	120	----
silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	100	80.0	120	----
sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	107	80.0	120	----
strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	99.7	80.0	120	----
sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	105	80.0	120	----
thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	99.4	80.0	120	----



Sub-Matrix: Soil/Solid

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 69091) - continued									
tin	7440-31-5	E440	2	mg/kg	50 mg/kg	101	80.0	120	----
titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	101	80.0	120	----
tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	101	80.0	120	----
uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	105	80.0	120	----
vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	111	80.0	120	----
zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	111	80.0	120	----
zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	95.6	80.0	120	----
Metals (QCLot: 70086)									
silver	7440-22-4	E440.Ag	0.1	mg/kg	10 mg/kg	96.1	80.0	120	----



Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
TCLP Metals (QCLot: 69851)										
VA20B1825-001	BA2031-A-1	antimony, TCLP	7440-36-0	E444	5.0 mg/L	5 mg/L	101	50.0	140	----
		arsenic, TCLP	7440-38-2	E444	4.7 mg/L	5 mg/L	93.9	50.0	140	----
		barium, TCLP	7440-39-3	E444	12.7 mg/L	12.5 mg/L	101	50.0	140	----
		beryllium, TCLP	7440-41-7	E444	0.237 mg/L	0.25 mg/L	94.8	50.0	140	----
		boron, TCLP	7440-42-8	E444	9.86 mg/L	10 mg/L	98.6	50.0	140	----
		cadmium, TCLP	7440-43-9	E444	ND mg/L	0.25 mg/L	ND	50.0	140	----
		calcium, TCLP	7440-70-2	E444	ND mg/L	250 mg/L	ND	50.0	140	----
		chromium, TCLP	7440-47-3	E444	1.20 mg/L	1.25 mg/L	95.7	50.0	140	----
		cobalt, TCLP	7440-48-4	E444	ND mg/L	0.25 mg/L	ND	50.0	140	----
		copper, TCLP	7440-50-8	E444	2.17 mg/L	2.5 mg/L	86.8	50.0	140	----
		iron, TCLP	7439-89-6	E444	223 mg/L	250 mg/L	89.3	50.0	140	----
		lead, TCLP	7439-92-1	E444	10.4 mg/L	10 mg/L	104	50.0	140	----
		magnesium, TCLP	7439-95-4	E444	228 mg/L	250 mg/L	91.4	50.0	140	----
		nickel, TCLP	7440-02-0	E444	2.29 mg/L	2.5 mg/L	91.5	50.0	140	----
		selenium, TCLP	7782-49-2	E444	4.94 mg/L	5 mg/L	98.8	50.0	140	----
		silver, TCLP	7440-22-4	E444	0.102 mg/L	0.1 mg/L	102	50.0	140	----
		thallium, TCLP	7440-28-0	E444	5.1 mg/L	5 mg/L	103	50.0	140	----
		vanadium, TCLP	7440-62-2	E444	0.71 mg/L	0.75 mg/L	94.7	50.0	140	----
		zinc, TCLP	7440-66-6	E444	ND mg/L	10 mg/L	ND	50.0	140	----
TCLP Metals (QCLot: 69852)										
VA20B1825-001	BA2031-A-1	mercury, TCLP	7439-97-6	E512	0.0009 mg/L	0.001 mg/L	89.0	50.0	140	----
TCLP Metals (QCLot: 73894)										
VA20B1825-013	BA2031-A-10 REP 1	antimony, TCLP	7440-36-0	E444	5.1 mg/L	5 mg/L	102	50.0	140	----
		arsenic, TCLP	7440-38-2	E444	4.8 mg/L	5 mg/L	96.4	50.0	140	----
		barium, TCLP	7440-39-3	E444	14.2 mg/L	12.5 mg/L	114	50.0	140	----
		beryllium, TCLP	7440-41-7	E444	0.226 mg/L	0.25 mg/L	90.4	50.0	140	----
		boron, TCLP	7440-42-8	E444	9.21 mg/L	10 mg/L	92.1	50.0	140	----
		cadmium, TCLP	7440-43-9	E444	ND mg/L	0.25 mg/L	ND	50.0	140	----
		calcium, TCLP	7440-70-2	E444	ND mg/L	250 mg/L	ND	50.0	140	----
		chromium, TCLP	7440-47-3	E444	1.22 mg/L	1.25 mg/L	97.9	50.0	140	----
		cobalt, TCLP	7440-48-4	E444	ND mg/L	0.25 mg/L	ND	50.0	140	----



Sub-Matrix: **Soil/Solid**

					<i>Matrix Spike (MS) Report</i>					
					<i>Spike</i>		<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>Concentration</i>	<i>Target</i>	<i>MS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
TCLP Metals (QCLot: 73894) - continued										
VA20B1825-013	BA2031-A-10 REP 1	copper, TCLP	7440-50-8	E444	2.34 mg/L	2.5 mg/L	93.8	50.0	140	----
		iron, TCLP	7439-89-6	E444	240 mg/L	250 mg/L	96.2	50.0	140	----
		lead, TCLP	7439-92-1	E444	10.7 mg/L	10 mg/L	107	50.0	140	----
		magnesium, TCLP	7439-95-4	E444	266 mg/L	250 mg/L	106	50.0	140	----
		nickel, TCLP	7440-02-0	E444	2.36 mg/L	2.5 mg/L	94.6	50.0	140	----
		selenium, TCLP	7782-49-2	E444	4.96 mg/L	5 mg/L	99.3	50.0	140	----
		silver, TCLP	7440-22-4	E444	0.111 mg/L	0.1 mg/L	111	50.0	140	----
		thallium, TCLP	7440-28-0	E444	5.2 mg/L	5 mg/L	104	50.0	140	----
		vanadium, TCLP	7440-62-2	E444	0.74 mg/L	0.75 mg/L	99.0	50.0	140	----
		zinc, TCLP	7440-66-6	E444	ND mg/L	10 mg/L	ND	50.0	140	----



Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix: Soil/Solid

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
							Low	High	
Metals (QCLot: 69090)									
QC-69090-003	SCP SS-2	mercury	7439-97-6	E510	0.059 mg/kg	96.8	70.0	130	----
Metals (QCLot: 69091)									
QC-69091-003	SCP SS-2	aluminum	7429-90-5	E440	9817 mg/kg	108	70.0	130	----
QC-69091-003	SCP SS-2	antimony	7440-36-0	E440	3.99 mg/kg	97.5	70.0	130	----
QC-69091-003	SCP SS-2	arsenic	7440-38-2	E440	3.73 mg/kg	98.8	70.0	130	----
QC-69091-003	SCP SS-2	barium	7440-39-3	E440	105 mg/kg	95.2	70.0	130	----
QC-69091-003	SCP SS-2	beryllium	7440-41-7	E440	0.349 mg/kg	98.0	70.0	130	----
QC-69091-003	SCP SS-2	boron	7440-42-8	E440	8.5 mg/kg	113	40.0	160	----
QC-69091-003	SCP SS-2	cadmium	7440-43-9	E440	0.91 mg/kg	109	70.0	130	----
QC-69091-003	SCP SS-2	calcium	7440-70-2	E440	31082 mg/kg	98.3	70.0	130	----
QC-69091-003	SCP SS-2	chromium	7440-47-3	E440	101 mg/kg	108	70.0	130	----
QC-69091-003	SCP SS-2	cobalt	7440-48-4	E440	6.9 mg/kg	101	70.0	130	----
QC-69091-003	SCP SS-2	copper	7440-50-8	E440	123 mg/kg	100	70.0	130	----
QC-69091-003	SCP SS-2	iron	7439-89-6	E440	23558 mg/kg	102	70.0	130	----
QC-69091-003	SCP SS-2	lead	7439-92-1	E440	267 mg/kg	94.6	70.0	130	----
QC-69091-003	SCP SS-2	lithium	7439-93-2	E440	9.5 mg/kg	96.1	70.0	130	----
QC-69091-003	SCP SS-2	magnesium	7439-95-4	E440	5509 mg/kg	105	70.0	130	----
QC-69091-003	SCP SS-2	manganese	7439-96-5	E440	269 mg/kg	102	70.0	130	----
QC-69091-003	SCP SS-2	molybdenum	7439-98-7	E440	1.03 mg/kg	95.5	70.0	130	----
QC-69091-003	SCP SS-2	nickel	7440-02-0	E440	26.7 mg/kg	103	70.0	130	----
QC-69091-003	SCP SS-2	phosphorus	7723-14-0	E440	752 mg/kg	100	70.0	130	----
QC-69091-003	SCP SS-2	potassium	7440-09-7	E440	1587 mg/kg	109	70.0	130	----
QC-69091-003	SCP SS-2	silver	7440-22-4	E440	4.06 mg/kg	85.1	70.0	130	----
QC-69091-003	SCP SS-2	sodium	7440-23-5	E440	797 mg/kg	99.5	70.0	130	----
QC-69091-003	SCP SS-2	strontium	7440-24-6	E440	86.1 mg/kg	92.8	70.0	130	----
QC-69091-003	SCP SS-2	thallium	7440-28-0	E440	0.0786 mg/kg	94.6	40.0	160	----
QC-69091-003	SCP SS-2	tin	7440-31-5	E440	10.6 mg/kg	91.6	70.0	130	----
QC-69091-003	SCP SS-2	titanium	7440-32-6	E440	839 mg/kg	111	70.0	130	----
QC-69091-003	SCP SS-2	uranium	7440-61-1	E440	0.52 mg/kg	103	70.0	130	----



Sub-Matrix: **Soil/Solid**

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
							Low	High	
Metals (QCLot: 69091) - continued									
QC-69091-003	SCP SS-2	vanadium	7440-62-2	E440	32.7 mg/kg	108	70.0	130	----
QC-69091-003	SCP SS-2	zinc	7440-66-6	E440	297 mg/kg	103	70.0	130	----
QC-69091-003	SCP SS-2	zirconium	7440-67-7	E440	5.73 mg/kg	93.4	70.0	130	----
Metals (QCLot: 70086)									
QC-70086-003	SCP SS-2	silver	7440-22-4	E440.Ag	4.06 mg/kg	93.4	70.0	130	----



ALS Environmental

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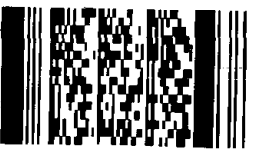
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Report To	Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company: Covanta Energy	<input type="checkbox"/> Standard <input type="checkbox"/> Other	<input checked="" type="radio"/> Regular (Standard 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 Burnaby BC	Email 1: smckinney@covanta.com	<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
Phone: 604-521-1025 Fax: <input type="checkbox"/> Yes <input type="checkbox"/> No	Email 2: rjohnson4@covanta.com	<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT
	Email 3: dskrypnik@covanta.com	Analysis Request
	brent.kirkpatrick@metrovancover.org	
	Sarah.Wellman@metrovancover.org	

Invoice To Same as Report ? ¹	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:															
Phone: Fax:	Quote #:														
Lab Work Order # (lab use only) 1875	ALS Contact:														
	Sampler:														


Sample #	Sample Identification (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	MET-TCLP-VA (all metals, Hg)	MOISTURE	Chrome 6	MET-CSR-FULL-VA (all metals)	Number of Containers
BA2031-A-1	Environmental Division Vancouver Work Order Reference VA20B1825  Telephone : +1 604 253 4188	29-Jul-20	9:00	Soil	X	X	X	1	
BA2031-A-2		29-Jul-20	9:00	Soil	X	X	X	1	
BA2031-A-3		29-Jul-20	9:00	Soil	X	X	X	1	
BA2031-A-4		29-Jul-20	9:00	Soil	X	X	X	1	
BA2031-A-5		29-Jul-20	9:00	Soil	X	X	X	1	
BA2031-A-6		29-Jul-20	9:00	Soil	X	X	X	1	
BA2031-A-7		29-Jul-20	9:00	Soil	X	X	X	1	
BA2031-A-8		29-Jul-20	9:00	Soil	X	X	X	1	
BA2031-A-9		29-Jul-20	9:00	Soil	X	X	X	1	
BA2031-A-10		29-Jul-20	9:00	Soil	X	X	X	1	
BA2031-A-11		29-Jul-20	9:00	Soil	X	X	X	1	
BA2031-A-12		29-Jul-20	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-mm-yy): 4-Aug-20	Time (hh-mm): 0800	Received by:	Date:	Time:	Temperature: 23.3°C	Verified by: JW	Date: Aug 4/20	Time: 12:05	Observations: Yes / No ? # Yes add SIF

GENF 20.00 Front

no ice