metrovancouver

Monthly Operating Reports

March 2019

The following March 2019 operating report was sent to the Ministry of Environment and Climate Change Strategy on May 10, 2019.

Metro Vancouver - Waste-to-Energy Facility
CONTINUOUS EMISSION MONITORING SYSTEM

March 2019

1. Monthly Summary Report

Parameter	Compliance Limit (mg/dscm)	Compliance Period	Maximum Measurement (mg/dscm)		
			Unit 1	Unit 2	Unit 3
CO	50	24 hr	37.4	37.9	33.1
SO_2	200	24 hr	117.3	187.9	147.7
NOx	190	24 hr	134.0	140.7	135.9
THC	10	24 hr	3.73	0.77	0.33
			Monthly Average (mg/dscm)		
			Unit 1	Unit 2	Unit 3
Opacity			1.40	0.30	0.40
CO			28.6	23.9	25.6
THC			0.36	0.26	0.25
SO_2			84.4	131.9	87.2
NOx			128.4	132.9	132.2

Interim Discharge Limits will apply until and including the following dates, at which point the Discharge Limits and Response Limits will apply

a. THC – December 31, 2018
b. HCl – December 31, 2022
c. SO_2 – December 31, 2022

2. Monthly Exceedance Report

2.a. Discharge Limit Exceedances

Unit	Compliance Parameter	Discharge Limit (mg/dscm)	Date	Exceedance Level
	Reason/Action Taken			

2.b. Response Limit Exceedances

Compliance Parameter: Total Hydrocarbons
Response Limit: 20 mg/dscm 1/2 hour average
Unit No. 1

Date / Time	Duration	Exceedance (mg/dscm)	Action Taken
6-Mar 01:00	30 min	30.0	Feeder hang up, started gas burners, modified feedrate, cleared hang up.

Compliance Parameter: Carbon Monoxide
Response Limit: 100 mg/dscm 1/2 hour average
Unit No. 1

Date / Time	Duration	Exceedance (mg/dscm)	Action Taken
1-Mar 09:30	30 min	141.7	Feeder hang up, started gas burners, modified feed rate, cleared hang up.
2-Mar 15:00	30 min	144.3	Feeder hang up, started gas burners, modified feed rate, cleared hang up.
5-Mar 23:30	30 min	217.1	Started gas burners, modified feed rate, adjusted airflow.
6-Mar 09:30	30 min	106.9	Feeder hang up, started gas burners, modified feed rate, cleared hang up.
10-Mar 22:00	30 min	134.0	Started gas burners, modified feed rate, adjusted air flow, inspected analyzer.
16-Mar 06:00	30 min	122.1	Started gas burners, adjusted air flow.
16-Mar 12:00	30 min	191.5	Feeder hang up, modified feed rate, adjusted air flow, inspected analyzer, cleared hang up.
16-Mar 16:00	30 min	119.0	Started gas burners, modified feed rate, adjusted air flow, inspected analyzer.
20-Mar 07:30	30 min	233.3	Unstable fuel, adjusted air flow, modified feed rate.
21-Mar 13:00	30 min	122.6	Started gas burners, adjusted air flow, modified feed rate.
23-Mar 10:30	30 min	113.5	Feeder hang up, started gas burners, modified feed rate, adjusted air flow, cleared hang up.
23-Mar 12:00	30 min	115.7	Started gas burners, adjusted air flow, modified feed rate.
25-Mar 14:00	30 min	115.2	Started gas burners, adjusted air flow, modified feed rate.
25-Mar 19:00	30 min	112.2	Started gas burners, adjusted air flow.
31-Mar 21:00	30 min	122.7	Started gas burners, adjusted air flow, modified feed rate.

Compliance Parameter: Carbon Monoxide
Response Limit: 100 mg/dscm 1/2 hour average
Unit No. 2

Date / Time	Duration	Exceedance (mg/dscm)	Action Taken
1-Mar 18:00	30 min	220.9	Started gas burners, modified feed rate, adjusted airflow.
2-Mar 13:00	30 min	120.8	Started gas burners, modified feed rate, adjusted airflow.
7-Mar 15:00	30 min	136.3	Feeder hang up, started gas burners, adjusted airflow, cleared hang up.
8-Mar 01:00	30 min	104.2	Modified feed rate, adjusted airflow.
8-Mar 11:00	30 min	211.4	Started gas burners, modified feed rate.
16-Mar 15:30	30 min	109.7	Started gas burners, adjusted airflow.
22-Mar 11:30	30 min	254.0	Unstable fuel, turned off gas burners, adjusted airflow.
26-Mar 08:00	30 min	118.0	Started gas burners, modified feed rate, adjusted airflow.
26-Mar 09:00	30 min	176.2	Started gas burners, modified feed rate, adjusted airflow, inspected analyzer.
27-Mar 18:30	30 min	103.6	Started gas burners, adjusted airflow.

Compliance Parameter: Carbon Monoxide
Response Limit: 100 mg/dscm 1/2 hour average
Unit No. 3

Date / Time	Duration	Exceedance (mg/dscm)	Action Taken
1-Mar 18:00	30 min	136.3	Started gas burners, modified feed rate, adjusted airflow.
13-Mar 15:00	30 min	123.6	Modified feed rate, adjusted airflow.
19-Mar 09:00	30 min	127.5	Adjusted airflow.
20-Mar 07:30	30 min	116.3	Unstable fuel, adjusted airflow, modified feed rate.

2.c. Transient Conditions

Boiler temperature below 800 C

Unit	Duration	Date	Time	
#2	1 hour	3-Mar-19	00:00 to 01:00	

Cause

Auxiliary burners on unit 2 were unavailable to maintain the secondary combustion zone temperature during a boiler shutdown period as required.

On March 2, 2019, unit 2 was shut down due to poor refuse quality. The furnace temperature dropped below 780 C and the unit required a purge before the gas burners could be lit. The Provincial Boiler Pressure Vessel Safety Act and the Provincial Gas Act requires a purge to prevent a buildup of combustible gasses in the boiler.

On March 3, 2019, the average furnace temperature between 00:00 and 01:00 was 640 C.

Action Taken to Restore Steady State Conditions

Once the purge was completed, the burners were lit at 00:03. The feedchute was opened at 01:06.

Remedial Action Planned and/or Taken

Covanta reviewed refuse pit management procedure with all refuse crane operators with specific attention to handling and mixing wet refuse.

Gas burners unavailable during shutdown

Unit	Duration	Date	Time	
#2	31 minutes	11-Mar-19	16:20-16:51	

Cause

Auxiliary burners on unit 2 were unavailable to maintain the secondary combustion zone temperature during a boiler shutdown period as required. The operator was unable to close the feed chute damper during the shutdown as required.

The forced draft fan tripped at 2019-03-11 16:20 and the induced draft fan tripped at 2019-03-11 16:25. The operator shutdown the unit following the forced draft fan trip to rectify the issue. The operator is unable to operate the boiler feeder without the draft fans operating which prevented the feed chute from closing for the duration of the shutdown.

The Provincial Boiler Pressure Vessel Safety Act and the Provincial Gas Act requires the auxiliary burners to trip following the loss of the forced draft fan or induced draft fan. Per the Act a boiler purge is required once the fans are running to restart the burners. The auxiliary burners were unavailable for a period of 31 minutes between 2019-03-11 16:20 and 2019-03-11 16:51.

Action Taken to Restore Steady State Conditions

Covanta restarted the forced draft fan at 2019-03-11 16:27 and the induced draft fan at 2019-03-11 16:31. Once the fans were operational the boiler was purged as required by the Safety Act. The natural gas burners were back online at 2019-03-11 16:51. The shutdown was completed at 2019-03-11 17:02.

Remedial Action Planned and/or Taken

Covanta reviewed practice of trouble shooting fan variable frequency drives while the unit is online. Will consider shutting the boiler down before trouble shooting variable frequency drives.

3. CEMS Availability

Analyzer	Required Availability (% hours per quarter)	Averaging Period	Monthly Availability		
			Unit 1	Unit 2	Unit 3
Opacity	90	Hour	100	100	100
Oxygen	90	Hour	99	99	99
CO	90	Hour	99	99	99
SO_2	90	Hour	99	99	99
NOx	90	Hour	99	99	99
THC	90	Hour	99	98	99
Stack Flow	90	Hour	99	98	99

4. Shutdown Report

Unit 1

Duration in Hours	Reason	Date
1.45	Soot blower inspection	March 1
17.27	Boiler wash	March 9-10
8.13	CEMS issue	March 10
0.48	BC Hydro switching	March 11
24.22	Primary economizer tube leak	March 17-18
0.27	Induced draft fan trip	March 28

Unit 2

Duration in Hours	Reason	Date
1.91	Poor refuse quality	March 2-3
79.08	Annual minor maintenance outage	March 4-7
0.75	BC Hydro switch gear maintenance	March 11
0.63	Under fire air issue	March 11
2.47	Variable frequency drive troubleshooting	March 13
0.47	Induced draft fan trip	March 16
28.08	Furnace tube leak	March 20-22
0.45	Induced draft fan trip	March 25

Unit 3

Duration in Hours	Reason	Date
0.10	Feed chute hang up	March 6
0.40	Incoming power outage	March 7
20.76	Ash discharger plugged	March 10-11
1.35	Feed chute plug	March 14
9.57	Generating bank water wash	March 16
0.95	Feed chute hang up	March 16
0.43	Induced draft fan trip	March 17
189.53	Annual major maintenance outage	March 24-31

5. Facility Bypass and Emergency/spill Event Report

Date/Time	Cause	Duration
	Action Taken	

6. Other Data

		UNIT 1	UNIT 2	UNIT 3
Waste Received	tonnes/day	18,927		
Waste Processed	tonnes/day	244	222	185
Maximum Waste Processed	tonnes/day	273	274	273
		Units 1, 2, and 3		
Natural Gas Consumed	m^3/day	2,600		
	m^3/month	80,597		
Fly ash disposed	tonnes	821		
Bottom ash disposed	tonnes	3,239		

7. Complaints and Responses

Date/Time	Complaint	Action Taken

March 2019 - Monthly CEMS Data

	Boiler #1								Boiler #2								Boiler #3							
	Stack	O_2	SO_2	NO_x	CO	THC	Opacity	Furnace	Stack	O_2	SO_2	NO_x	CO	THC	Opacity	Furnace	Stack	O_2	SO_2	NO_x	CO	THC	Opacity	Furnace
Date	Temp	(%)	(mg/m^3)	(mg/m^3)	(mg/m^3)	(mg/m^3)	(%)	Temp	Temp	(%)	(mg/m^3)	(mg/m^3)	(mg/m^3)	(mg/m^3)	(%)	Temp	Temp	(%)	(mg/m^3)	(mg/m^3)	(mg/m^3)	(mg/m^3)	(%)	Temp
3/1/19	153	9.2	73.5	132.1	26.2	0.18	1.68	937	153	9	74.4	129.1	37.9	0.18	0.42	933	152	8.7	66.3	133	33.1	0.25	0.14	891
3/2/19	154	9.9	78.6	133.7	27.6	0.23	1.7	908	154	9.4	69.9	127.8	24.9	0.18	0.45	912	151	9	73.1	133.6	27.8	0.29	0.13	876
3/3/19	155	9.4	89.2	133.3	22.5	0.19	1.69	931	154	9.2	96.2	129	23.7	0.11	0.41	922	152	8.5	95.8	135.9	22.7	0.29	0.13	902
3/4/19	151	9.2	80.3	129.8	22	0.17	1.7	935									149	8.6	74.8	133.2	19	0.21	0.15	912
3/5/19	152	9.8	93.7	131.1	30.3	0.27	1.74	926									151	9	82.9	131.4	24.4	0.21	0.14	943
3/6/19	151	9.8	98.4	127.4	36.2	0.37	1.78	926									152	8.9	90.8	133.2	28.6	0.28	0.18	929
3/7/19	149	9.5	64.3	129.1	27.3	0.17	1.75	927									150	8.8	70.9	131	24.9	0.21	0.13	930
3/8/19	151	9.5	53.8	125.2	26.5	0.14	1.73	928	149	9.5	131.8	140.7	29.7	0.02	0.21	913	150	9	56.4	128.9	22.5	0.20	0.12	944
3/9/19									149	9.5	183.8	139.6	22.2	0.00	0.28	928	148	8.8	98.2	135	19.5	0.20	0.09	946
3/10/19									147	10.4	176	140.4	12.1	0.19	0.19	931	148	8.8	123.8	133.7	23.8	0.22	0.07	945
3/11/19	148	11	86	133	35.7	3.73	1.76	918	151	10	131.3	136.7	21.4	0.01	0.2	932								
3/12/19	149	9.2	75	134	25.9	0.44	1.75	912	152	9.7	132.9	137.7	22.2	0.00	0.26	914	148	9.2	63.4	130.9	30.3	0.24	0.04	927
3/13/19	151	9.2	98.5	132.6	21.8	0.21	1.51	898	151	9.8	147	134.7	20.7	0.06	0.2	879	149	9.6	81.3	132.2	24.3	0.27	0.03	921
3/14/19	152	9.3	91	132.5	24.9	0.21	1.01	893	151	9.8	109.9	133.4	26.5	0.33	0.26	880	148	10.1	62.9	131.9	29.6	0.32	0.01	901
3/15/19	151	9.4	70.8	127.1	29.5	0.22	0.97	890	154	10.1	108.8	134.1	28.7	0.52	0.41	870	150	10.1	68.9	132.2	30.3	0.26	0.49	895
3/16/19	149	9.4	107.8	127.3	37.4	0.27	0.99	884	150	9.8	172.9	134.8	24.3	0.42	0.41	876								
3/17/19	148	9.9	104.6	126.4	26.5	0.24	1.05	870	148	10	157.1	135.2	23.2	0.31	0.38	864	151	10	147.7	135.4	27.9	0.33	1.16	880
3/18/19									151	9.4	116.5	131.9	25.3	0.41	0.29	877	150	8.9	90.1	131.5	26.2	0.24	1.08	912
3/19/19	154	9.4	103.6	127.8	22.6	0.33	1.11	901	150	9.4	121.6	130.5	22.6	0.46	0.2	897	148	8.7	100.6	131.4	27.4	0.25	1.04	940
3/20/19	155	8.9	96.1	125.8	26.6	0.25	1.14	878	154	9.6	126.9	131.1	21.8	0.77	0.22	887	146	8.1	80.3	130	27.1	0.28	1.04	919
3/21/19	154	9.4	89.3	127.5	33.1	0.19	1.15	877									147	8.5	80.3	128.8	25.1	0.30	1.04	931
3/22/19	154	9.3	117.3	126.6	27.4	0.20	1.28	871	151	9.5	187.9	127.9	31.7	0.25	0.1	860	147	8.9	132	131.5	25.1	0.31	1.04	905
3/23/19	153	9.3	84.1	127.2	30.4	0.24	1.21	869	152	9.4	125.3	130.8	17.9	0.36	0.2	883	149	8.9	90.3	132.3	18.5	0.19	1.07	933
3/24/19	153	9.2	88.6	125.1	25.7	0.18	1.28	872	152	9.5	145.1	130.3	17.3	0.25	0.39	884								
3/25/19	155	9.2	90.6	125.9	36.8	0.16	1.37	875	150	9.4	134.1	129.6	25.5	0.33	0.27	896								
3/26/19	151	9.5	114.9	127.3	25.2	0.16	1.43	876	149	9.8	176.7	131.6	22.5	0.22	0.25	905								
3/27/19	151	9.5	99	125	30.3	0.23	1.45	869	151	9.9	147	131.6	23.3	0.33	0.37	887								
3/28/19	154	9.4	69.7	126	29.3	0.23	1.5	869	153	9.8	124.9	129.9	25.7	0.34	0.16	911								
3/29/19	151	9.9	53.2	124.6	29.3	0.37	1.49	874	152	10	111.8	130.6	24.9	0.18	0.3	935								
3/30/19	152	9.9	45.8	125.1	28.7	0.31	1.46	885	152	9.9	109.8	131.3	21.7	0.19	0.21	945								
3/31/19	151	9.4	46.3	127.6	33.9	0.20	1.34	880	153	10	109.3	134.2	22.4	0.23	0.31	944								
Average	151.9	9.5	84.4	128.4	28.6	0.36	1.4	895.7	151.3	9.7	131.9	132.9	23.9	0.26	0.3	902.5	149.3	9.0	87.2	132.2	25.6	0.25	0.4	918.2
Min	148.0	8.9	45.8	124.6	21.8	0.14	1.0	869.0	147.0	9.0	69.9	127.8	12.1	0.00	0.1	860.0	146.0	8.1	56.4	128.8	18.5	0.19	0.0	876.0
Max	155.0	11.0	117.3	134.0	37.4	3.73	1.8	937.0	154.0	10.4	187.9	140.7	37.9	0.77	0.5	945.0	152.0	10.1	147.7	135.9	33.1	0.33	1.2	946.0
St Dev	2.09	0.39	19.47	3.07	4.47	0.66	0.27	24.16	1.91	0.32	31.01	3.73	4.85	0.18	0.10	25.82	1.77	0.53	23.51	1.89	3.86	0.04	0.46	21.56

Blank days have less than 18 hours of valid data due to unit shut downs.
According to standard guidelines used by Metro Vancouver Air Quality Policy and Environment Division, a minimum of 18 hours of valid data is required to generate a valid 24hr average.