

Monthly Operating Reports

June 2019

The following June 2019 operating report was sent to the Ministry of Environment and Climate Change Strategy on August 7, 2019.



Metro Vancouver - Waste-to-Energy Facility

CONTINUOUS EMISSION MONITORING SYSTEM

June 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	34.5	32.6	45.2
SO ₂	200	24 hr	86.7	99.3	81.1
NO _x	190	24 hr	129.9	132.1	137.6
THC	10	24 hr	0.37	0.21	1.06
			Monthly Average (mg/dscm)		
			Unit 1	Unit 2	Unit 3
Opacity			0.58	0.74	0.84
CO			25.2	24.6	35.2
THC			0.27	0.08	0.38
SO ₂			63.2	72.0	61.0
NO _x			126.7	128.4	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. SO₂ – 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: Carbon Monoxide

Response Limit: 100 mg/dscm 1/2 hour average

Unit No. 1

Date / Time	Duration	Exceedance (mg/dscm)	Action Taken
3-Jun 08:00	30 min	138.9	Volatile fuel, adjusted airflow, modified feed rate.
3-Jun 10:00	30 min	102.2	Volatile fuel, adjusted airflow, modified feed rate.
14-Jun 13:00	30 min	168.1	Adjusted airflow, modified feed rate.
15-Jun 01:00	30 min	128.8	Feeder hang up, started gas burners, adjusted airflow, modified feed rate, cleared hang up.
17-Jun 14:00	30 min	327.9	Feeder hang up, started gas burners, adjusted airflow, modified feed rate, cleared hang up.
19-Jun 12:30	30 min	112.7	Started gas burners, adjusted airflow.
23-Jun 09:00	30 min	110.9	Started gas burners, adjusted airflow, 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
3-Jun 07:30	30 min	149.3	Volatile fuel, adjusted airflow, modified feed rate, inspected analyzer.
4-Jun 09:00	30 min	150.9	Volatile fuel, adjusted airflow, modified feed rate.
14-Jun 12:00	30 min	149.6	Unburnt fuel, adjusted airflow, modified feed rate.
23-Jun 09:30	30 min	129.6	Adjusted airflow, modified feed rate.
23-Jun 13:30	30 min	146.4	Started gas burners, adjusted airflow, modified feed rate.

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

Date / Time	Duration	Exceedance (mg/dscm)	Action Taken
2-Jun 02:00	30 min	126.0	Poor refuse quality, started gas burners, adjusted airflow, modified feed rate.
3-Jun 12:00	30 min	109.2	Started gas burners, adjusted airflow, modified feed rate.
5-Jun 06:30	30 min	153.7	Adjusted airflow, modified feed rate.
10-Jun 09:30	30 min	105.4	Adjusted airflow, modified feed rate.
12-Jun 14:30	30 min	123.6	Started gas burners, adjusted airflow, modified feed rate.
12-Jun 19:00	30 min	114.6	Started gas burners, adjusted airflow, modified feed rate.
17-Jun 10:00	30 min	134.4	Induced draft and forced draft fans tripped, shut down.
17-Jun 14:00	30 min	114.5	Induced draft and forced draft fans tripped, started gas burners, adjusted airflow, modified feed rate.
19-Jun 02:30	30 min	139.3	Volatile fuel, started gas burners, adjusted airflow.
19-Jun 10:30	30 min	129.8	Poor refuse quality, adjusted airflow, modified feed rate.
19-Jun 11:00	30 min	130.1	Started gas burners, adjusted airflow.
19-Jun 15:00	30 min	113.8	Induced draft fan trip, started gas burners, adjusted airflow.

2.c. Transient Conditions

Gas burners unavailable and unable to close feed chute damper during shutdown

Unit	Duration	Date	Time	
#1	20 minutes	18-Jun-19	13:35 - 13:55	
Cause				
<p>Auxiliary burners on unit 1 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.</p> <p>The unit 1 induced draft fan tripped on a motor bearing high temperature alarm at 2019-06-18 13:34. The boiler safety logic shut down the forced draft fan following the loss of the induced draft fan, to prevent pressure build up in the boiler. The unit was shut down at 2019-06-18 13:35 to rectify the issue. 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 before restarting the burners. The auxiliary burners were unavailable for a period of 20 minutes between 2019-06-18 13:35 and 2019-06-18 13:55.</p> <p>The operator is unable to operate the boiler feeder without the induced draft fan operating, which prevented the feed chute from closing for the duration of the shutdown.</p>				
Action Taken to Restore Steady State Conditions				
<p>Covanta restarted the induced draft fan and forced draft fan at 2019-06-18 13:39. Once the fans were operational, the boiler was purged as required by the Safety Act. The natural gas burners were back online at 2019-06-18 13:55. The shutdown was completed at 2019-06-18 14:10.</p>				

Remedial Action Planned and/or Taken

Metro Vancouver's facility operator (Covanta) adjusted the motor bearing cooling fans and have scheduled a cleaning of the cooling loop.

Unit	Duration	Date	Time
#3	22 minutes	18-Jun-19	14:01 - 14:23

Cause

Auxiliary burners on unit 3 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 unit 3 induced draft fan and forced draft fan tripped on a high motor temperature alarm at 2019-06-18 14:01. The unit was shutdown at 2019-06-18 14:01 to rectify the issue. 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 before restarting the burners. The auxiliary burners were unavailable for a period of 22 minutes between 2019-06-18 14:01 and 2019-06-18 14:23.

The operator is unable to operate the boiler feeder without the induced draft fan operating, which prevented the feed chute from closing for the duration of the shutdown.

Action Taken to Restore Steady State Conditions

Covanta restarted the induced draft fan and forced draft fan at 2019-06-18 14:15. Once the fans were operational, the boiler was purged as required by the Safety Act. The natural gas burners were back online at 2019-06-18 14:23. The shutdown was completed at 2019-06-18 14:47.

Remedial Action Planned and/or Taken

Metro Vancouver's facility operator (Covanta) reduced the load on the boilers to reduce the induced draft fan load.

Unit	Duration	Date/Time	Time
#3	43 minutes	19-Jun-19	8:32 - 9:25

Cause

Auxiliary burners on unit 3 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 unit 3 induced draft fan and forced draft fan tripped on a BC Hydro power failure at 2019-06-19 08:30. 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 before restarting the burners. Covanta experienced a technical issue with the under fire air controller and a second purge was required to meet the requirements of the Safety Act. The auxiliary burners were unavailable for a period of 43 minutes between 2019-06-19 08:32 and 2019-06-19 09:25.

The operator is unable to operate the boiler feeder without the induced draft fan operating, which prevented the feed chute from closing for the duration of the shutdown.

Action Taken to Restore Steady State Conditions

Covanta restarted the induced draft fan and forced draft fan at 2019-06-19 09:10. Once the fans were operational, the boiler was purged as required by the Safety Act. The natural gas burners were back online at 2019-06-19 09:25. The shutdown was completed at 2019-06-19 09:47.

Remedial Action Planned and/or Taken

Metro Vancouver's facility operator (Covanta) corrected the issues with the under fire air controller.

Unit	Duration	Date/Time	Time
#3	86 minutes	19-Jun-19	11:19 - 13:13
Cause			
<p>Auxiliary burners on unit 3 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.</p> <p>The unit 3 induced draft fan and forced draft fan tripped due to high motor amperage at 2019-06-19 11:14. 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 before restarting the burners. During the purge and burner restart, both the induced draft fan and forced draft fan experienced multiple trips which delayed the restart. The auxiliary burners were unavailable for a period of one hour and 26 minutes between 2019-06-19 11:19 and 2019-06-19 13:13.</p> <p>The operator is unable to operate the boiler feeder without the induced draft fan operating, which prevented the feed chute from closing for the duration of the shutdown.</p>			
Action Taken to Restore Steady State Conditions			
<p>Covanta restarted the induced draft fan and forced draft fan at 2019-06-19 11:50. Once the fans were operational, the boiler was purged as required by the Safety Act. During the restart, the fans tripped and were restarted at 2019-06-19 13:06. The natural gas burners were back online at 2019-06-19 13:13. The shutdown was completed at 2019-06-19 13:40.</p>			
Remedial Action Planned and/or Taken			
<p>Metro Vancouver's facility operator (Covanta) is investigating the electrical issues causing the fans to trip and is reviewing the variable frequency drive controls.</p>			

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	98	99
CO	90	Hour	99	98	99
SO ₂	90	Hour	99	98	99
NOx	90	Hour	99	98	99
THC	90	Hour	99	98	99
Stack Flow	90	Hour	99	98	98

4. Shutdown Report

Unit 1

Duration in Hours	Reason	Date
0.43	Induced draft fan trip	June 18
0.53	Induced draft fan trip	June 30

Unit 2

Duration in Hours	Reason	Date
0.53	Induced and forced draft fan trips	June 17
0.45	BC Hydro outgoing line trip	June 19
0.38	BC Hydro incoming line trip	June 19

Unit 3

Duration in Hours	Reason	Date
0.40	Visual inspection for broken grate bar	June 16
0.15	Induced and forced draft fan trips	June 17
0.63	Feeder plug	June 17
0.15	Induced draft fan trip	June 18
0.77	Induced draft fan trip	June 18
0.78	BC Hydro incoming line trip	June 19
2.18	BC Hydro outgoing line trip	June 19
28.69	Grate bar repair	June 19-21
0.30	Induced draft fan trip	June 21
0.60	High pressure trip	June 22
0.12	Induced draft fan trip	June 22
0.25	Induced draft fan trip	June 27

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	19,889		
Waste Processed	tonnes/day	242	242	236
Maximum Waste Processed	tonnes/day	255	250	256
		Units 1, 2, and 3		
Natural Gas Consumed	m ³ /day	1,191		
	m ³ /month	35,724		
Fly ash disposed	tonnes	785		
Bottom ash disposed	tonnes	3,562		

7. Complaints and Responses

Date/Time	Complaint	Action Taken

June 2019 - Monthly CEMS Data

Date	Boiler #1								Boiler #2								Boiler #3							
	Stack Temp	O ₂ (%)	SO ₂ (mg/m ³)	NO _x (mg/m ³)	CO (mg/m ³)	THC (mg/m ³)	Opacity (%)	Furnace Temp	Stack Temp	O ₂ (%)	SO ₂ (mg/m ³)	NO _x (mg/m ³)	CO (mg/m ³)	THC (mg/m ³)	Opacity (%)	Furnace Temp	Stack Temp	O ₂ (%)	SO ₂ (mg/m ³)	NO _x (mg/m ³)	CO (mg/m ³)	THC (mg/m ³)	Opacity (%)	Furnace Temp
6/1/19	153	10	68.5	129.8	27.8	0.37	0.66	939	154	8.6	68.2	132.1	30.1	0.07	1.97	920	147	9.1	66.7	137.6	40	0.27	0.84	931
6/2/19	152	10.1	63.9	127.6	20.6	0.28	0.66	943	155	8.8	68.8	129.4	26.7	0.09	2.03	913	146	9.2	61	133.8	39.3	0.29	0.80	915
6/3/19	153	10.4	57.5	128	24.2	0.33	0.67	925	153	9.1	57	129.4	28.2	0.05	2.14	956	144	9.1	49.4	131	37	0.27	0.82	922
6/4/19	152	9.9	59.1	126	23.7	0.29	0.68	946	154	8.9	58.4	127.7	25.4	0.04	0.93	975	147	9.1	55.1	132.7	34.7	0.24	0.93	932
6/5/19	151	9.9	76.2	127.5	26.6	0.27	0.71	949	155	10.2	96.1	126.1	28	0.20	0.14	940	146	8.8	73.3	131.3	40.6	0.28	0.91	932
6/6/19	152	9.8	65.1	126.8	29.7	0.24	0.71	945	154	11	58.1	127.9	24.5	0.03	0.16	937	148	9	56.2	132.9	42.7	0.25	0.97	931
6/7/19	153	9.7	66.7	129.9	26.1	0.28	0.74	949	154	9.1	77.2	129.5	24.2	0.12	0.18	942	147	9.2	59	133.6	37.7	0.22	1.01	915
6/8/19	154	9.9	58.6	128.9	23	0.28	0.71	942	155	9	73.6	128.1	19.2	0.03	0.12	941	148	9.4	57.2	132.7	30.7	0.25	0.92	938
6/9/19	155	9.9	53.9	128.5	20.5	0.22	0.70	949	155	8.8	56.9	127.9	18.8	0.04	0.11	954	147	9.3	46.6	131.5	30.3	0.23	0.86	937
6/10/19	153	9.7	66.4	126.1	28.6	0.25	0.70	943	156	8.9	86.6	129.4	24.3	0.09	0.06	952	147	9	58.4	132.7	38.4	0.25	0.81	934
6/11/19	154	9.9	54.5	127.2	28.8	0.27	0.64	919	155	8.9	58.9	126.4	19.4	0.06	0.07	959	147	9.2	55.6	131.1	43.1	0.30	0.69	899
6/12/19	151	9.8	86.7	126.3	23.3	0.28	0.64	913	155	9.1	68.7	128.4	32.1	0.05	0.37	920	145	9.2	49.2	131.6	45.2	0.38	0.58	879
6/13/19	153	9.6	66.4	128.2	15.3	0.28	0.63	928	156	9.1	68.6	127.8	22.8	0.02	1.37	934	147	9.4	53.8	130.8	43.1	0.82	0.68	902
6/14/19	153	9.9	72.3	127.2	23.7	0.28	0.67	941	157	9.3	96.3	128.5	23.1	0.10	1.98	959	148	9.2	77.3	132.4	36.6	1.06	0.86	919
6/15/19	155	9.9	65.7	129.2	21.6	0.29	0.68	932	158	9.4	82.6	130.4	15.6	0.03	1.88	956	149	9.6	62.6	131.5	32.1	0.65	0.81	932
6/16/19	154	9.9	64.2	127.5	16	0.24	0.63	925	157	9.7	77	130.1	17.5	0.02	1.82	938	148	9.6	74.5	131.8	35.6	0.56	0.81	917
6/17/19	153	9.8	46.3	127.9	32.4	0.26	0.66	930	156	9.6	51.9	128.1	26.5	0.06	1.17	941	146	9.7	35.4	131.7	42.4	0.59	0.79	902
6/18/19	154	10.2	48.6	125.4	23.5	0.24	0.62	932	153	9.6	45.1	126.2	24.3	0.05	0.23	942	146	9.5	42.8	129.8	34.6	0.51	0.73	896
6/19/19	152	9.9	45.9	127.9	25.3	0.23	0.66	939	153	9.1	68.9	128.3	18.8	0.21	0.35	970								
6/20/19	155	9.6	60.5	126.7	21.2	0.24	0.55	954	156	8.7	67.1	129.5	25.5	0.13	0.50	968								
6/21/19	155	10	77.6	127.3	25.1	0.31	0.40	948	155	8.8	81.1	128.1	21	0.05	0.38	970	147	9.1	68.7	133.7	38	0.35	0.86	923
6/22/19	155	9.6	68	124.5	28.8	0.26	0.38	973	155	8.5	79.8	127	23.3	0.04	0.42	978	147	9.1	70.3	132.4	29.9	0.26	0.90	929
6/23/19	156	10.1	79.7	125.5	29.9	0.30	0.38	937	155	9	78.3	128.1	32.6	0.16	0.50	938	146	8.9	73.8	133.1	33.1	0.25	0.90	960
6/24/19	154	9.8	52.8	125.1	33.1	0.23	0.40	940	155	9	55.3	128.6	24.3	0.06	0.46	928	147	8.9	52.6	132.1	27.1	0.26	0.94	953
6/25/19	153	9.7	59.9	126.2	23.7	0.20	0.42	942	156	8.9	78.3	128.9	24.4	0.05	0.33	932	148	8.9	67.8	132.2	28.7	0.29	0.85	958
6/26/19	154	9.6	52.5	125.5	23.3	0.20	0.38	951	154	8.9	72.7	127.2	30.1	0.13	0.20	930	148	9.1	64.5	131.4	30.8	0.36	0.81	943
6/27/19	153	9.9	55.9	124.5	23	0.23	0.41	937	153	8.7	66.9	128	28.4	0.05	0.28	942	149	9.3	62.1	132.9	28.5	0.34	0.94	934
6/28/19	151	10.3	59.4	121.1	34.5	0.31	0.45	914	154	9.2	78.8	127.1	31.6	0.11	0.35	911	148	9.2	60.1	131.3	30.1	0.40	0.86	934
6/29/19	152	10.2	73.7	125.7	21.8	0.27	0.43	931	155	9	87.9	129.5	21.2	0.10	0.25	936	150	9.3	81.1	131.6	26	0.34	0.85	955
6/30/19	152	10.1	68.2	124.9	24.3	0.33	0.41	921	156	9.1	99.3	128.3	20.5	0.04	0.24	922	149	8.9	73.9	129.7	26.2	0.43	0.78	952
5/31/19	154	10.1	65.7	125.8	33.3	0.29	0.69	919	155	8.5	66.6	128.4	31.2	0.05	1.90	917	147	8.9	61.1	131.8	38.1	0.30	0.80	941
Average	153.3	9.9	63.2	126.7	25.2	0.27	0.58	937.3	155.0	9.1	72.0	128.4	24.6	0.08	0.74	942.6	147.2	9.2	61.0	132.2	35.2	0.38	0.84	928.1
Min	151.0	9.6	45.9	121.1	15.3	0.20	0.38	913.0	153.0	8.5	45.1	126.1	15.6	0.02	0.06	911.0	144.0	8.8	35.4	129.7	26.0	0.22	0.58	879.0
Max	156.0	10.4	86.7	129.9	34.5	0.37	0.74	973.0	158.0	11.0	99.3	132.1	32.6	0.21	2.14	978.0	150.0	9.7	81.1	137.6	45.2	1.06	1.01	960.0
St Dev	1.32	0.21	9.76	1.81	4.66	0.04	0.13	13.10	1.22	0.50	13.37	1.27	4.57	0.05	0.73	18.47	1.26	0.23	10.82	1.46	5.64	0.19	0.09	19.66

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.