

Monthly Operating Reports

July 2020

The following July 2020 operating report was sent to the Ministry of Environment and Climate Change Strategy on September 10, 2020.

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

July 2020

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	42.9	39.5	44.7
SO ₂	200	24 hr	109.1	102.1	120.0
NO _x	190	24 hr	132.5	140.5	150.1
THC	10	24 hr	0.36	0.12	0.63
			Monthly Average (mg/dscm)		
			Unit 1	Unit 2	Unit 3
Opacity (%)			0.26	0.67	1.12
CO			27.7	26.7	34.1
THC			0.19	0.05	0.48
SO ₂			65.0	60.8	67.2
NO _x			127.8	131.4	134.9

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

a. HCl – December 31, 2022

b. 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
1-Jul 10:00	30 min	118.0	Adjusted airflow, modified feed rate.
4-Jul 14:00	30 min	104.8	Started gas burners, adjusted airflow, modified feed rate.
9-Jul 13:30	30 min	112.9	Started gas burners, adjusted airflow, modified feed rate.
11-Jul 15:00	30 min	133.1	Started gas burners, adjusted airflow, modified feed rate.
13-Jul 02:30	30 min	105.4	Started gas burners, adjusted airflow, modified feed rate.
18-Jul 02:00	30 min	144.9	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.
18-Jul 02:30	30 min	145.2	Adjusted airflow, modified feed rate.
18-Jul 03:30	30 min	212.4	Adjusted airflow, modified feed rate.
18-Jul 07:30	30 min	116.5	Feeder hang up, started gas burners, adjusted airflow, modified feed rate, cleared hang up.
18-Jul 08:30	30 min	103.9	Started gas burners, adjusted airflow.
19-Jul 05:00	30 min	103.9	Feeder hang up, started gas burners, adjusted airflow, modified feed rate, cleared hang up.

19-Jul 16:00	30 min	115.0	Feeder hang up, started gas burners, adjusted airflow, modified feed rate, cleared hang up.
22-Jul 09:00	30 min	111.0	Started gas burners, adjusted airflow, modified feed rate.
22-Jul 09:30	30 min	105.7	Started gas burners, adjusted airflow, modified feed rate.
24-Jul 22:30	30 min	104.9	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.
29-Jul 11:30	30 min	127.0	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
13-Jul 11:30	30 min	100.7	Started gas burners, adjusted airflow, modified feed rate.
14-Jul 14:30	30 min	139.8	Feeder hang up, started gas burners, adjusted airflow, modified feed rate, cleared hang up.
18-Jul 12:00	30 min	112.6	Dusty load, adjusted airflow
20-Jul 11:30	30 min	167.8	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.
28-Jul 06:30	30 min	104.5	Started gas burners, adjusted airflow, modified feed rate.
30-Jul 10:00	30 min	181.5	Started gas burners, adjusted airflow, modified feed rate.
30-Jul 10:30	30 min	131.4	Started gas burners, adjusted airflow, modified feed rate.
31-Jul 12:30	30 min	106.8	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.

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

Date / Time	Duration	Exceedance (mg/dscm)	Action Taken
5-Jul 13:30	30 min	131.7	Feeder hang up, started gas burners, adjusted airflow, modified feed rate, cleared hang up.
9-Jul 12:30	30 min	119.3	Started gas burners, adjusted airflow, modified feed rate.
13-Jul 11:30	30 min	118.0	Feeder hang up, started gas burners, adjusted airflow, modified feed rate.
13-Jul 12:00	30 min	107.3	Feeder hang up, started gas burners, adjusted airflow, modified feed rate, cleared hang up.
30-Jul 06:00	30 min	150.0	Started gas burners, adjusted airflow, modified feed rate.
30-Jul 10:30	30 min	115.0	Started gas burners, adjusted airflow, modified feed rate.
31-Jul 11:30	30 min	113.0	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.
31-Jul 12:00	30 min	348.7	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.

2.c. Transient Conditions

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

Unit	Duration	Date	Time	
1	5 hr 20 min	3-Jul-20	12:24 - 17:44	
Cause				
<p>The facility lost incoming power due to trees downing the local hydro power lines. All three boilers were shutdown utilizing the emergency backup power. Auxiliary burners on unit 1 were unavailable due to the loss of power to the induced draft fan and the forced draft fan. The operator was unable to close the feed chute damper during the shutdown as required.</p> <p>Unit 1 was placed in shutdown mode at 2020-07-03 12:24 following the loss of incoming power. The operator was unable to close the feed chute damper as the refuse was above the damper in the feed chute. The Provincial Boiler Pressure Vessel Safety Act and the Provincial Gas Act required a boiler purge following the restart of the fans as the boiler temperature was below the safety permissive. The auxiliary burners were unavailable for a period of 4 hours and 6 minutes between 2020-07-03 12:24 and 2020-07-03 16:30.</p>				
Action Taken to Restore Steady State Conditions				
<p>Incoming power to the facility was restored at 2020-07-03 15:15. Covanta restarted the induced draft fan at 2020-07-03 15:34 and the forced draft fan at 2020-07-03 16:16. The natural gas burners were back online at 2020-07-03 16:30. The shutdown was completed at 2020-07-03 17:44.</p>				
Remedial Action Planned and/or Taken				
None identified				

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

Unit	Duration	Date	Time	
2	5 hr 31 min	3-Jul-20	12:24 - 17:55	
Cause				
<p>The facility lost incoming power due to trees downing the local hydro power lines. All three boilers were shutdown utilizing the emergency backup power. Auxiliary burners on unit 2 were unavailable due to the loss of power to the induced draft fan and the forced draft fan. The operator was unable to close the feed chute damper during the shutdown as required.</p> <p>Unit 2 was placed in shutdown mode at 2020-07-03 12:24 following the loss of incoming power. The operator was unable to close the feed chute damper as the refuse was above the damper in the feed chute. The Provincial Boiler Pressure Vessel Safety Act and the Provincial Gas Act required a boiler purge following the restart of the fans as the boiler temperature was below the safety permissive. The auxiliary burners were unavailable for a period of 4 hours and 6 minutes between 2020-07-03 12:24 and 2020-07-03 16:30.</p>				
Action Taken to Restore Steady State Conditions				
<p>Incoming power to the facility was restored at 2020-07-03 15:15. Covanta restarted the induced draft fan at 2020-07-03 15:33 and the forced draft fan at 2020-07-03 16:16. The natural gas burners were back online at 2020-07-03 16:30. The shutdown was completed at 2020-07-03 17:55.</p>				
Remedial Action Planned and/or Taken				
None identified				

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

Unit	Duration	Date	Time	
3	4 hr 56 min	3-Jul-20	12:24 - 17:20	
Cause				
<p>The facility lost incoming power due to trees downing the local hydro power lines. All three boilers were shutdown utilizing the emergency backup power. Auxiliary burners on unit 3 were unavailable due to the loss of power to the induced draft fan and the forced draft fan. The operator was unable to close the feed chute damper during the shutdown as required.</p> <p>Unit 3 was placed in shutdown mode at 2020-07-03 12:24 following the loss of incoming power. The operator was unable to close the feed chute damper as the refuse was above the damper in the feed chute. The Provincial Boiler Pressure Vessel Safety Act and the Provincial Gas Act required a boiler purge following the restart of the fans as the boiler temperature was below the safety permissive. The auxiliary burners were unavailable for a period of 3 hours and 56 minutes between 2020-07-03 12:24 and 2020-07-03 16:20.</p>				
Action Taken to Restore Steady State Conditions				
<p>Incoming power to the facility was restored at 2020-07-03 15:15. Covanta restarted the induced draft fan at 2020-07-03 15:30 and the forced draft fan at 2020-07-03 16:06. The natural gas burners were back online at 2020-07-03 16:20. The shutdown was completed at 2020-07-03 17:20.</p>				
Remedial Action Planned and/or Taken				
<p>None identified</p>				

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

Unit	Duration	Date	Time	
1	2 hr 16 min	12-13 Jul-20	22:00 - 00:16	
Cause				
<p>The facility lost incoming power due to a BC Hydro outage. All three boilers were shut down utilizing the emergency backup power. Auxiliary burners on unit 1 were unavailable due to the loss of power to the induced draft fan and the forced draft fan. The operator was unable to close the feed chute damper during the shutdown as required.</p> <p>Unit 1 was placed in shutdown mode at 2020-07-12 22:00 following the loss of incoming power. The operator was unable to close the feed chute damper as the refuse was above the damper in the feed chute. The Provincial Boiler Pressure Vessel Safety Act and the Provincial Gas Act required a boiler purge following the restart of the fans as the boiler temperature was below the safety permissive. The auxiliary burners were unavailable for a period of 1 hour and 50 minutes between 2020-07-12 22:00 and 2020-07-12 23:50.</p>				
Action Taken to Restore Steady State Conditions				
<p>Incoming power to the facility was restored at 2020-07-12 22:00. When the power was established the emergency generator transfer switch failed and did not switch back on. The plant was restarted using a combination of power from the emergency generator and power from BC Hydro. Covanta restarted the induced draft fan at 2020-07-12 23:10 and the forced draft fan at 2020-07-12 23:11. The natural gas burners were back online at 2020-07-12 23:50. The shutdown was completed at 2020-07-13 00:16..</p>				
Remedial Action Planned and/or Taken				
<p>Covanta installed a rental power switch on July 17, 2020 restoring full power connection to BC Hydro.</p>				

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

Unit	Duration	Date/Time	Time
2	1 hr 58 min	12-13 Jul-20	22:00 - 00:16
Cause			
The facility lost incoming power due to a BC Hydro outage. All three boilers were shut down utilizing the emergency backup power. Auxiliary burners on unit 2 were unavailable due to the loss of power to the induced draft fan and the forced draft fan. The operator was unable to close the feed chute damper during the shutdown as required.			
Action Taken to Restore Steady State Conditions			
Incoming power to the facility was restored at 2020-07-12 22:00. When the power was established the emergency generator transfer switch failed and did not switch back on. The plant was restarted using a combination of power from the emergency generator and power from BC Hydro. Covanta restarted the induced draft fan at 2020-07-12 23:12 and the forced draft fan at 2020-07-12 23:11. The natural gas burners were back online at 2020-07-12 23:58. The shutdown was completed at 2020-07-13 00:16.			
Remedial Action Planned and/or Taken			
Covanta installed a rental power switch on July 17, 2020 restoring full power connection to BC Hydro.			

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

Unit	Duration	Date/Time	Time
3	3 hr 3 min	12-13 Jul-20	22:00 - 01:03
Cause			
The facility lost incoming power due to a BC Hydro outage. All three boilers were shut down utilizing the emergency backup power. Auxiliary burners on unit 3 were unavailable due to the loss of power to the induced draft fan and the forced draft fan. The operator was unable to close the feed chute damper during the shutdown as required.			
Unit 3 was placed in shutdown mode at 2020-07-12 22:00 following the loss of incoming power. The operator was unable to close the feed chute damper as the refuse was above the damper in the feed chute. The Provincial Boiler Pressure Vessel Safety Act and the Provincial Gas Act required a boiler purge following the restart of the fans as the boiler temperature was below the safety permissive. The auxiliary burners were unavailable for a period of 2 hours and 18 minutes between 2020-07-12 22:00 and 2020-07-13 00:18.			
Action Taken to Restore Steady State Conditions			
Incoming power to the facility was restored at 2020-07-12 22:00. When the power was established the emergency generator transfer switch failed and did not switch back on. The plant was restarted using a combination of power from the emergency generator and power from BC Hydro. Covanta restarted the induced draft fan at 2020-07-12 23:14 and the forced draft fan at 2020-07-12 23:15. The natural gas burners were back online at 2020-07-13 00:18. The shutdown was completed at 2020-07-13 01:03.			
Remedial Action Planned and/or Taken			
Covanta installed a rental power switch on July 17, 2020 restoring full power connection to BC Hydro.			

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

Unit	Duration	Date/Time	Time	
2	59 min	29-Jul-20	10:04-11:03	
Cause				
<p>Auxiliary burners on unit 2 were unavailable, due to a safety permissive, 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>Unit 2 was placed in shutdown mode at 2020-07-29 10:04 following an induced draft fan and forced draft fan trip. The operator was unable to close the feed chute damper as the refuse was above the damper in the feed chute. The Provincial Boiler Pressure Vessel Safety Act and the Provincial Gas Act required a boiler purge following the restart of the fans as the boiler temperature was below the safety permissive. The auxiliary burners were unavailable for a period of 20 minutes between 2020-07-29 10:04 and 2020-07-29 10:24.</p>				
Action Taken to Restore Steady State Conditions				
<p>Covanta restarted the induced draft fan at 2020-07-29 10:05 and the forced draft fan at 2020-07-29 10:10. The natural gas burners were back online at 2020-07-29 10:24. The shutdown was completed at 2020-07-29 11:03.</p>				
Remedial Action Planned and/or Taken				
<p>Covanta is investigating the cause of the induced draft fan and forced draft fan trip.</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	100	99	99
CO	90	Hour	100	99	99
SO ₂	90	Hour	100	99	99
NOx	90	Hour	100	99	99
THC	90	Hour	100	99	99
Stack Flow	90	Hour	100	97	99

4. Shutdown Report

Unit 1

Duration in Hours	Reason	Date
5.35	BC Hydro power interruption	July 3
0.05	High furnace pressure trip	July 7
2.18	BC Hydro power interruption	July 12-13
23.40	Back-up generator transfer switch replacement	July 17-18
0.25	Forced draft fan trip	July 19
24.14	Black plant maintenance outage	July 27-28
0.27	Induced draft fan trip	July 28
0.38	Air cooled condenser high temperature trip	July 30

Unit 2

Duration in Hours	Reason	Date
0.25	Induced draft fan trip	July 1
5.20	BC Hydro power interruption	July 3
0.22	Induced draft fan trip	July 4
0.05	Induced draft fan trip	July 10
0.18	Boiler trip - bypass valve control issue	July 10
7.48	Generating bank wash	July 10
2.23	BC Hydro power interruption	July 12-13
0.80	Induced draft fan trip	July 17
13.92	Back-up generator transfer switch replacement	July 17
24.54	Black plant maintenance outage	July 27-28
0.78	Induced draft fan trip	July 28
2.40	Induced draft fan trip	July 29
0.58	Induced draft fan trip	July 29
0.98	Induced draft fan trip	July 29
1.18	Air cooled condenser high temperature trip	July 30

Unit 3

Duration in Hours	Reason	Date
5.53	BC Hydro power interruption	July 3
0.33	Boiler trip - bypass valve control issue	July 10
2.81	BC Hydro power interruption	July 12-13
375.68	Annual major maintenance outage	July 13-29
0.43	Air cooled condenser high temperature trip	July 30
8.48	Baghouse hopper conveyor repair	July 30

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	16,372		
Waste Processed	tonnes/day	221	213	104
Maximum Waste Processed	tonnes/day	258	243	244
Units 1, 2, and 3				
Natural Gas Consumed	m ³ /day	3,253		
	m ³ /month	100,829		
Fly ash disposed	tonnes	692		
Bottom ash disposed	tonnes	2,836		

7. Complaints and Responses

Date/Time	Complaint	Action Taken

July 2020 - 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
7/1/20	158	9.7	64	129.8	34.8	0.13	0.25	942	159	9.6	51.7	131.7	28	0.04	0.85	924	147	10.5	60.5	130.1	35.4	0.55	1.08	882
7/2/20	161	9.7	52.8	129.8	25.8	0.12	0.22	950	159	9.7	42.6	129.6	34.9	0.01	0.00	921	149	10.2	53.6	128.9	30.4	0.43	1.05	896
7/3/20	158	9.7	54.6	124.2	26.1	0.22	0.28	943	157	9.5	49.6	132.3	39.5	0.02	0.02	916	147	10.1	70.1	143.6	29.7	0.50	1.09	906
7/4/20	158	9.6	68.1	125.6	25.6	0.15	0.31	958	154	9.6	54.4	134.8	22.8	0.06	0.32	925	148	10.5	78.6	150.1	34.8	0.50	1.10	893
7/5/20	162	9.9	65.7	129.8	20.8	0.07	0.27	959	152	9.6	51.1	133.7	17.8	0.02	0.59	930	146	10.5	66.1	139.7	32.4	0.47	1.15	903
7/6/20	162	10	44.4	128.9	22.6	0.15	0.27	943	156	10.1	37.8	140.5	25.6	0.04	0.64	901	149	10.5	57.6	141.4	36.2	0.49	1.16	885
7/7/20	161	10	57	127.2	27.2	0.20	0.26	943	156	10	58	138.3	24.6	0.06	0.86	925	148	10.8	60.7	139.9	37	0.47	1.12	895
7/8/20	161	10.2	54.7	130	21.1	0.12	0.26	943	154	10	47.5	136.7	19.4	0.05	0.67	923	144	10.9	59.1	140.6	36.8	0.51	1.17	885
7/9/20	157	10.1	59.9	128.6	24.6	0.12	0.25	930	152	9.7	42.7	128.2	19.9	0.03	0.59	928	143	10.8	59.9	129.3	32.9	0.41	1.16	891
7/10/20	162	10.2	68.5	131	26.6	0.11	0.30	938								143	11.1	58.2	129.1	37.2	0.50	1.18	879	
7/11/20	162	10	73.9	128.2	33.5	0.17	0.26	947	156	9.7	68.7	130.5	29.3	0.07	1.22	903	144	11	77.2	128.6	28.4	0.44	1.17	897
7/12/20	162	9.4	64.4	127	23.5	0.10	0.24	957	156	9.6	67.7	130.3	28.9	0.05	0.81	930	146	10.6	76.9	127.9	27.2	0.45	1.14	898
7/13/20	149	10.5	23.2	123.5	27.9	0.21	0.29	900	152	10.2	36.2	130.9	28.7	0.05	0.61	883	145	10.9	42.5	127.8	34.3	0.41	1.19	877
7/14/20	155	10	41.3	128.4	19.1	0.22	0.25	942	152	10.3	46.1	130.4	28	0.07	0.72	889								
7/15/20	157	10.5	61.2	129.5	21	0.18	0.22	929	154	10.3	63.8	131.3	22.3	0.05	0.71	907								
7/16/20	155	10.5	65.2	129.2	19.2	0.17	0.27	939	153	9.9	63	130.3	22.1	0.03	0.66	932								
7/17/20																								
7/18/20	158	10.6	109.1	132.5	42.9	0.32	0.23	929	155	10.1	68.6	131.1	30	0.12	0.95	929								
7/19/20	158	10.8	78.7	128.9	34.5	0.22	0.21	930	153	10.3	56.4	129.4	22.6	0.04	0.34	927								
7/20/20	154	11.2	42.1	128.5	34	0.24	0.20	917	152	10.3	47.9	128.6	29.4	0.06	0.29	914								
7/21/20	154	10.9	45.3	128.1	31.3	0.24	0.26	937	152	10.2	45.3	128.8	24.9	0.08	0.38	921								
7/22/20	157	10.2	65.3	129.3	30.2	0.17	0.29	942	149	9.9	51.4	130.4	29.1	0.05	0.57	934								
7/23/20	154	10.1	86.4	128.7	26.2	0.24	0.30	949	152	9.7	96.8	130.9	20.7	0.06	0.78	922								
7/24/20	156	10.1	81.4	130.6	38.5	0.36	0.29	938	154	9.4	75.7	128.5	28	0.02	1.15	928								
7/25/20	158	10.4	86.1	128.5	26	0.18	0.25	936	155	9.8	81	131.5	25.4	0.06	1.34	921								
7/26/20	156	10.1	75.8	130.6	24.3	0.19	0.24	934	155	9.5	68.2	129.6	20.6	0.06	0.80	935								
7/27/20																								
7/28/20	161	10.4	96.6	124.3	27.6	0.21	0.28	920	159	10.1	102.1	129.8	31.5	0.05	0.86	906								
7/29/20	160	10.2	84.2	127.1	29.4	0.19	0.35	932	156	9.7	84.6	131.7	29.4	0.04	1.05	938								
7/30/20	154	10.4	61	123.7	29.9	0.27	0.32	919	154	9.9	77.4	130.8	37.6	0.08	0.64	915								
7/31/20	152	10.7	55.2	115.6	29.5	0.17	0.26	935	153	10	65.9	128.5	25.4	0.02	0.25	917	149	10.3	120	131.1	44.7	0.63	0.95	867
Average	158	10.2	65.0	127.8	27.7	0.19	0.26	937	154.3	9.9	60.8	131.4	26.7	0.05	0.67	919.4	146.3	10.6	67.2	134.9	34.1	0.48	1.12	889.6
Min	149	9.4	23.2	115.6	19.1	0.07	0.20	900	149.0	9.4	36.2	128.2	17.8	0.01	0.00	883.0	143.0	10.1	42.5	127.8	27.2	0.41	0.95	867.0
Max	162	11.2	109.1	132.5	42.9	0.36	0.35	959	159.0	10.3	102.1	140.5	39.5	0.12	1.34	938.0	149.0	11.1	120.0	150.1	44.7	0.63	1.19	906.0
St Dev	3.4	0.41	18.04	3.24	5.71	0.06	0.03	12.8	2.44	0.28	16.99	2.96	5.31	0.02	0.33	13.40	2.20	0.30	18.18	7.37	4.49	0.06	0.06	10.88

Blank days have less than 18 hours of valid data due to unit shut downs or analyzer outage
 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