Metro Vancouver - Waste-to-Energy Facility
CONTINUOUS EMISSION MONITORING SYSTEM
September 2021

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	39.5	33.3	35.5
SO_2	200	24 hr	127.7	107.6	125.5
NOx	190	24 hr	124.9	136.8	132.8
THC	10	24 hr	0.34	0.15	0.88
			Monthly Average (mg/dscm)		
			Unit 1	Unit 2	Unit 3
Opacity (%)			0.52	0.39	0.48
CO			27.1	22.2	26.5
THC			0.06	0.05	0.25
SO_2			55.6	67.4	74.5
NOx			119.5	129.1	129.8

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

a. HCl – March 3, 2025

b. SO_2 – March 3, 2025

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
4-Sep 09:00	30 min	127.6	Started gas burners, adjusted airflow, modified feed rate.
10-Sep 09:30	30 min	285.9	Started gas burners, adjusted airflow, modified feed rate.
10-Sep 11:30	30 min	126.0	Started gas burners, adjusted airflow, modified feed rate.
15-Sep 09:30	30 min	124.0	Started gas burners, adjusted airflow, modified feed rate.
15-Sep 10:00	30 min	114.3	Started gas burners, adjusted airflow, modified feed rate.
17-Sep 09:30	30 min	112.3	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.
21-Sep 10:00	30 min	102.1	Started gas burners, adjusted airflow, modified feed rate.
21-Sep 13:30	30 min	100.7	Started gas burners, adjusted airflow, modified feed rate.
22-Sep 14:00	30 min	144.6	Started gas burners, adjusted airflow, modified feed rate.
23-Sep 15:30	30 min	104.5	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
1-Sep 19:00	30 min	103.2	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.
3-Sep 11:00	30 min	116.2	No action required, unit self corrected.
4-Sep 06:30	30 min	101.9	Started gas burners, adjusted airflow, modified feed rate.
4-Sep 12:00	30 min	105.3	Adjusted airflow, modified feed rate.
29-Sep 09:00	30 min	130.0	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
6-Sep 17:00	30 min	110.9	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.
13-Sep 07:30	30 min	127.8	Started gas burners, adjusted airflow, modified feed rate.
22-Sep 06:30	30 min	109.9	Started gas burners, adjusted airflow, modified feed rate.
23-Sep 18:00	30 min	154.6	Started gas burners, adjusted airflow, modified feed rate.

2.c. Transient Conditions

Gas burners unavailable during shutdown and furnace temperature average below 800C

Unit	Duration	Date	Time	
#3	29 minutes	5-Sep-21	03:51-04:20	

Cause

Auxiliary burners on unit 3 were unavailable to maintain the secondary combustion zone temperature during boiler shutdown period.

Unit 3 was placed in shutdown mode at 2021-09-05 at 03:51 due to a communications failure. The Provincial Boiler Vessel Safety Act and the Provincial Gas Act require a boiler purge following the restart of the combustion fans. The auxiliary burners were unavailable for a period of 29 minutes between 2021-09-05 03:51 and 04:20.

Action Taken to Restore Steady State Conditions

The induced draft fan and forced draft fan were restarted at 2021-09-05 04:03. Natural gas burners were online at 2021-09-05 04:20. The shutdown was complete at 2021-09-05 04:43.

Remedial Action Planned and/or Taken

Covanta is determining the cause of the communications failure.

Gas burners unavailable during shutdown and furnace temperature average below 800C

Unit	Duration	Date	Time	
#3	28 minutes	5-Sep-21	05:22-05:50	

Cause

Auxiliary burners on unit 3 were unavailable to maintain the secondary combustion zone temperature during boiler shutdown period.

Unit 3 was placed in shutdown mode at 2021-09-05 at 05:22 due to a communications failure. The Provincial Boiler Vessel Safety Act and the Provincial Gas Act require a boiler purge following the restart of the combustion fans. The auxiliary burners were unavailable for a period of 28 minutes between 2021-09-05 05:22 and 05:50.

Action Taken to Restore Steady State Conditions

The induced draft fan and forced draft fan were restarted at 2021-09-05 05:28. Natural gas burners were online at 2021-09-05 05:50. The shutdown was complete at 2021-09-05 06:12.

Remedial Action Planned and/or Taken

Covanta is determining the cause of the communications failure.

Gas burners unavailable during shutdown and furnace temperature average below 800C

Unit	Duration	Date	Time	
#3	19 minutes	5-Sep-21	06:47-08:06	

Cause

Auxiliary burners on unit 3 were unavailable to maintain the secondary combustion zone temperature during boiler shutdown period.

Unit 3 was placed in shutdown mode at 2021-09-05 at 06:47 due to a communications failure. The Provincial Boiler Vessel Safety Act and the Provincial Gas Act require a boiler purge following the restart of the combustion fans. The auxiliary burners were unavailable for a period of 19 minutes between 2021-09-05 06:47 and 08:06.

Action Taken to Restore Steady State Conditions

The induced draft fan was restarted at 2021-09-05 07:47 and the forced draft fan at 2021-09-05 07:48. Natural gas burners were online at 2021-09-05 08:06. The shutdown was complete at 2021-09-05 08:35.

Remedial Action Planned and/or Taken

The communications card was replaced.

Gas burners unavailable during shutdown and furnace temperature average below 800C

Unit	Duration	Date	Time	
#2	10 minutes	26-Sep-21	11:53-12:03	

Cause

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

Unit 2 was placed in shutdown mode at 2021-09-26 at 11:53 due to an induced and foreced draft fan trip. The Provincial Boiler Vessel Safety Act and the Provincial Gas Act require a boiler purge following the restart of the combustion fans. The auxiliary burners were unavailable for a period of 10 minutes between 2021-09-26 11:53 and 12:03.

Action Taken to Restore Steady State Conditions

The induced draft fan was restarted at 2021-09-26 11:53 and the forced draft fan at 2021-09-26 11:55. Natural gas burners were online at 2021-09-26 12:03. The shutdown was complete at 2021-09-26 12:26.

Remedial Action Planned and/or Taken

Electrical event recorder will be installed to determine cause of unknow trips.

Gas burners unavailable during shutdown and furnace temperature average below 800C

Unit	Duration	Date	Time	
#2	14 minutes	26-Sep-21	13:58-14:12	

Cause

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

Unit 2 was placed in shutdown mode at 2021-09-26 at 13:35 to replace a bag in the fabric filter baghouse. At 2021 09-26 13:58 the induced draft fan tripped, causing the gas burners to go off line. The Provincial Boiler Vessel Safety Act and the Provincial Gas Act require a boiler purge following the restart of the combustion fans. The auxiliary burners were unavailable for a period of 14 minutes between 2021-09-26 13:58 and 14:12.

Action Taken to Restore Steady State Conditions

The induced draft fan was restarted at 2021-09-26 14:00 and the forced draft fan at 2021-09-26 14:02. Natural gas burners were online at 2021-09-26 14:12. The shutdown was complete at 2021-09-26 14:24.

Remedial Action Planned and/or Taken

Electrical event recorder will be installed to determine cause of unknow trips.

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	100	100
CO	90	Hour	99	100	100
SO_2	90	Hour	99	100	100
NOx	90	Hour	99	100	100
THC	90	Hour	99	100	100
Stack Flow	90	Hour	99	100	100

4. Shutdown Report

Unit 1

Duration in Hours	Reason	Date
2.42	Generating bank inlet fouled	September 15
27.78	Generating bank inlet fouled	September 16-17
6.43	Boiler casing leak	September 18
41.75	Furnace tube leak	September 27-29
13.43	Ash screw conveyor jammed	September 30

Unit 2

Duration in Hours	Reason	Date
0.37	Underfire air inspection	September 3
15.65	Broken grate bars	September 12
333.25	Annual major maintenance outage	September 13-25
0.27	Induced draft fan trip	September 26
0.67	Fabric filter baghouse bag change	September 26
0.57	Induced draft fan trip	September 26

Unit 3

Duration in Hours	Reason	Date
32.98	Primary economizer tube leak	September 2-3
3.26	Delta V communications issue	September 5
0.18	BC Hydro power interruption	September 18
5.66	Ash discharger plug	September 20-21

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	**17,839**		
Waste Processed	tonnes/day	**195**	**125**	**224**
Maximum Waste Processed	tonnes/day	**245**	**241**	**248**
		Units 1, 2, and 3		
Natural Gas Consumed	m^3/day	**5,370**		
	m^3/month	**161,114**		
Fly ash disposed	tonnes	**807**		
Bottom ash disposed	tonnes	**2,637**		

7. Complaints and Responses

Date/Time	Complaint	Action Taken

ATTACHMENT 2

September 2021 - 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
9/1/21	153	9.1	40.8	124.9	21.6	0.00	0.30	925	157	8.8	57.9	130.2	22.4	0.04	0.65	956	152	8.4	51.3	129.7	23.9	0.09	0.39	942
9/2/21	153	9.2	37.9	121.6	24.7	0.00	0.34	917	157	8.6	58	127.5	18.3	0.02	0.61	956								
9/3/21	154	9.5	39.6	122.1	26.3	0.00	0.31	919	157	8.9	57.4	125.4	22.8	0.04	0.55	951								
9/4/21	155	9.6	58	124	25.1	0.00	0.31	928	158	9	85.1	127.7	23.5	0.06	0.60	965	160	8.4	92.8	128.9	26.3	0.21	0.40	932
9/5/21	154	9.7	42.4	121.9	34	0.34	0.31	894	156	9.1	60.1	125.7	22.2	0.03	0.53	934	155	8.3	79.8	130.2	35.4	0.20	0.37	912
9/6/21	156	9.5	41.8	122.8	22.4	0.01	0.31	906	156	9.2	60.9	128	19	0.02	0.39	934	150	8.2	62	130.8	28.5	0.23	0.36	910
9/7/21	154	9.5	55.8	122.9	31.1	0.00	0.32	923	156	9	68.6	129.7	18.9	0.07	0.52	946	154	8.5	62.6	132.8	22.1	0.21	0.37	924
9/8/21	153	9.9	40.1	121.6	23.9	0.00	0.31	931	156	8.8	58.7	128.4	16.4	0.06	0.35	957	154	8.7	65.3	132	21.9	0.28	0.35	922
9/9/21	157	9.8	38	123.2	22.9	0.16	0.32	920	157	8.8	56.5	127.8	13.7	0.04	0.26	947	157	8.8	66.5	130	25	0.25	0.36	922
9/10/21	155	9.3	37.3	121	32	0.13	0.44	937	157	9.1	51.4	129.4	14.8	0.01	0.35	932	156	8.7	60.9	131.9	24.1	0.23	0.36	921
9/11/21	153	9.1	39.5	120.7	24.3	0.12	0.30	921	156	8.9	53.2	126.7	22	0.04	0.98	930	155	8.5	63.7	130.3	23	0.18	0.42	930
9/12/21	152	9.5	47.7	121.5	22.6	0.10	0.32	921									153	8.6	76.6	128.3	23.6	0.26	0.37	947
9/13/21	154	9.1	43.6	118.8	22.6	0.09	0.51	945									155	8.8	62.2	131	28.5	0.30	0.38	908
9/14/21	155	9.4	59.4	115.7	32.8	0.11	0.82	949									155	8.9	94.4	129.4	21.4	0.24	0.44	936
9/15/21	148	9.5	71.7	110.7	34.1	0.15	1.23	949									153	8.6	94.6	130.3	23.7	0.22	0.42	942
9/16/21																	155	8.8	125.5	130.6	28.7	0.17	0.45	922
9/17/21																	154	8.3	110	130.5	23.7	0.23	0.48	939
9/18/21																	154	8.4	117.5	128.9	28.5	0.19	0.46	940
9/19/21	155	8.9	127.7	120.3	19.9	0.01	1.07	941									155	8.6	93.7	131.2	24.9	0.19	0.42	931
9/20/21	157	9.5	91.6	121.6	17.4	0.06	0.52	914									155	9	71	128.7	26.1	0.88	0.39	925
9/21/21	154	9.8	70.4	115.1	29.1	0.02	0.66	921									151	8.5	64.2	124.7	22.6	0.20	0.35	917
9/22/21	155	9.5	69.8	117	39.5	0.03	0.64	889									154	8.8	60.9	127.6	33.9	0.25	0.45	907
9/23/21	153	9.7	50.3	117	36.7	0.02	0.60	882									155	8.9	58	128.4	35.5	0.18	0.29	904
9/24/21	154	9.4	54.2	113.3	32.5	0.02	0.65	892									156	8.7	52.1	123	27.4	0.15	0.29	925
9/25/21	155	9.2	55.8	117.5	33.9	0.03	0.68	905									157	8.8	65.2	130.5	28.2	0.23	0.29	914
9/26/21	156	9.1	61.6	115.1	20.4	0.02	0.65	902									158	8.1	79.4	130.2	23.5	0.19	0.34	925
9/27/21	156	9.2	58.8	117	21.2	0.01	0.62	912	152	9.1	94.5	130	30.3	0.04	0.00	881	158	8.1	71.7	131.6	26.8	0.20	0.50	933
9/28/21									152	9.6	107.6	133	33.3	0.15	0.00	894	160	8.4	76.6	130.7	27.8	0.24	0.67	925
9/29/21									150	9.4	77.1	136.8	24	0.10	0.00	905	159	8.5	57.3	132.3	31.3	0.46	1.23	919
9/30/21									151	9.4	64.3	130.1	32.1	0.04	0.01	895	158	8.6	50.6	129.4	26.4	0.21	1.70	914
Average	154	9.4	55.6	119.5	27.1	0.06	0.52	918	155.2	9.0	67.4	129.1	22.2	0.05	0.39	932.2	155.3	8.6	74.5	129.8	26.5	0.25	0.48	924.6
Min	148	8.9	37.3	110.7	17.4	0.00	0.30	882	150.0	8.6	51.4	125.4	13.7	0.01	0.00	881.0	150.0	8.1	50.6	123.0	21.4	0.09	0.29	904.0
Max	157	9.9	127.7	124.9	39.5	0.34	1.23	949	158.0	9.6	107.6	136.8	33.3	0.15	0.98	965.0	160.0	9.0	125.5	132.8	35.5	0.88	1.70	947.0
St Dev	1.9	0.26	20.61	3.68	6.11	0.08	0.25	18.6	2.57	0.27	16.46	2.89	5.91	0.04	0.29	26.46	2.46	0.24	19.95	2.11	3.87	0.14	0.30	11.56

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