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ORTECH
a Kontrol Technologies Company

Report:

Covanta Durham York Renewable Energy Limited Partnership
Durham York Energy Centre 2021 Compliance Emission Testing in Accordance with Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX

Date: March 8, 2022





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EXECUTIVE SUMMARY

ORTECH Consulting Inc. (ORTECH) completed the annual compliance emission testing program at the Durham York Energy Centre (DYEC) located in Courtice, Ontario between November 28 and December 10, 2021. The emission testing program was performed to satisfy the requirements of the Ontario Ministry of the Environment, Conservation and Parks (MECP) Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX. Section 7(1) of the ECA states that "the owner shall perform annual source testing, in accordance with the procedures and schedule outlined in the attached Schedule E, to determine the rates of emissions of the test contaminants from the stack. The program shall be conducted not later than six months after the commencement date of operation of the facility/equipment and subsequent source testing programs shall be conducted once every calendar year thereafter". This program is the thirteenth comprehensive Schedule E source testing program conducted at the facility. A list of the test programs conducted by ORTECH to date is provided below:

Test Program	Test Date	ORTECH Report No.
2015 Compliance	September/October 2015	21546
2016 Voluntary	May 2016	21656
2016 Compliance	October/November 2016	21698
2017 Voluntary	May 2017	21754
2017 Compliance	October 2017	21800
2018 Voluntary	May/June 2018	21840
2018 Compliance	September 2018	21880
2019 Voluntary	June 2019	21936
2019 Compliance	September 2019	21960
2020 Voluntary	June 2020	22001
2020 Compliance	November 2020	22050
2021 Voluntary	June 2021	22081
2021 Compliance	November/December 2021	22085

Source testing was performed on the Baghouse (BH) Outlet of Boiler No. 1 and BH Outlet of Boiler No. 2 for the test contaminants listed in Schedule D of the ECA.

Triplicate emission tests were completed for particulate matter, metals, semi-volatile organic compounds, acid gases, volatile organic compounds, aldehydes and combustion gases at the BH Outlet of each Boiler. Triplicate emission tests were also completed for total hydrocarbons at the Quench Inlet of each Boiler. The contaminant groups included in the emission test program and the reference test methods used are summarized below:

Test Groups	Reference Method
Particulate and Metals	US EPA Method 29
$PM_{2.5}$/PM_{10} and Condensable Particulate	US EPA Methods 201A and 202
Semi-Volatile Organic Compounds	Environment Canada Method EPS 1/RM/2
Volatile Organic Compounds	US EPA SW-846 Method 0030 (SLO VOST modification)
Aldehydes	NCASI Method ISS/FP-A105.01
Halides and Ammonia	US EPA Method 26A
Combustion Gases:	
Oxygen and Carbon Dioxide	Facility CEM
Carbon Monoxide	Facility CEM
Sulphur Dioxide	Facility CEM
Nitrogen Oxides	Facility CEM
Total Hydrocarbons	ORTECH per US EPA Method 25A

Schedule C of ECA No. 7306-8FDKNX lists in-stack limits for the emissions of various compounds. In-stack emissions limits are given for particulate matter, mercury, cadmium, lead, dioxins and furans and organic matter for comparison with the results from compliance source testing. In-stack emission limits are also given for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide calculated as the rolling arithmetic average of data measured by a continuous emission monitoring system (CEMS).

Since relative accuracy and system bias testing was conducted in June 2021, the data recorded by the DYEC CEMS was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide. Note the DYEC CEMS data for the days when isokinetic testing was performed at each unit (November 29 to December 2, 2021 for Boiler No. 1, and November 29 to December 2, 2021 and December 9 to December 10, 2021 for Boiler No. 2) was used to determine the minimum, average and maximum concentrations of the combustion gases listed in the ECA. Concentration data measured by ORTECH on November 28 and November 29, 2021 was used to assess against the total hydrocarbons (organic matter) in-stack emissions limit detailed in Schedule C of the ECA.

Consistent with the approach commonly required by the MECP for compliance emission testing programs, the following results are conservative in the sense that when the analytical result is reported to be below the detection limit, the full detection limit is used to calculate emission data and is shown by a "<" symbol. Also, when one or both Boiler results are reported to be below the detection limit, the detection limit was used to conservatively estimate the total emission rate for the Main Stack.

The MECP "Summary of Standards and Guidelines to Support Ontario Regulation 419/05 – Air Pollution – Local Air Quality", dated April 2012, provides an updated framework for calculating dioxin and furan toxicity equivalent concentrations which includes emission data for 12 dioxin-like PCBs. This document was replaced by "Air Contaminants Benchmarks List: standards, guidelines and screening levels for assessing point of impingement concentrations of air contaminants", with the most recent version published on April 27, 2018, however the dioxin and furan toxicity equivalent calculation methodology remains the same. The dioxins, furans and dioxin-like PCBs toxicity equivalent emission data was also calculated using half the detection limit for those compounds not detected. The half detection limit data was used to assess against the dispersion modelling Point of Impingement limit. The toxicity equivalent concentrations calculated using the full detection limit, for those compounds less than the reportable detection limit, were used to assess against the in-stack limit detailed in Schedule C of the ECA.

The average results for the tests conducted at Boiler No. 1, along with the respective in-stack emission limits, are summarized in the following table:

Parameter	Test No. 1	Test No. 2	Test No. 3	Average	In-Stack Limit
Total Power Output (MWh/day)*	-	-	-	371	-
Average Combustion Zone Temp. (°C)*	-	-	-	1246	-
Steam (tonnes/day)*	-	-	-	802	-
MSW Combusted (tonnes/day)*	-	-	-	206	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	995	-
Carbon Injection (kg/day)*	-	-	-	126	-
Lime Injection (kg/day)*	-	-	-	4175	-
Filterable Particulate (mg/Rm^3) (1)	0.30	0.78	<0.38	<0.48	9
PM_{10} with Condensable (mg/Rm^3) (1)	<3.34	<4.49	<3.99	<3.94	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<3.21	<4.29	<3.93	<3.81	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.10	<0.10	<0.10	<0.10	-
Ammonia (mg/Rm^3) (1)	0.52	0.53	0.53	0.53	-
Cadmium (µg/Rm^3) (1)	0.043	0.043	0.11	0.064	7
Lead (µg/Rm^3) (1)	0.65	0.50	0.22	0.46	50
Mercury (µg/Rm^3) (1)	<0.054	<0.054	<0.052	<0.053	15
Antimony (µg/Rm^3) (1)	0.56	0.74	0.048	0.45	-
Arsenic (µg/Rm^3) (1)	0.25	<0.043	0.050	<0.11	-
Barium (µg/Rm^3) (1)	1.82	1.53	1.53	1.63	-
Beryllium (µg/Rm^3) (1)	<0.043	<0.043	0.14	<0.076	-
Chromium (µg/Rm^3) (1)	0.91	0.82	0.71	0.81	-
Cobalt (µg/Rm^3) (1)	0.032	0.026	0.13	0.063	-
Copper (µg/Rm^3) (1)	2.46	2.06	1.88	2.13	-
Molybdenum (µg/Rm^3) (1)	6.96	6.76	6.56	6.76	-
Nickel (µg/Rm^3) (1)	0.66	0.78	0.62	0.69	-
Selenium (µg/Rm^3) (1)	<0.22	<0.22	<0.21	<0.21	-
Silver (µg/Rm^3) (1)	<0.043	<0.043	<0.042	<0.043	-
Thallium (µg/Rm^3) (1)	<0.043	<0.043	0.19	<0.091	-
Vanadium (µg/Rm^3) (1)	<0.022	0.12	0.16	<0.098	-
Zinc (µg/Rm^3) (1)	4.59	5.72	4.75	5.02	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<13.0	<18.1	<12.9	<14.7	60
Total Chlorobenzenes (ng/Rm^3) (1)	<242	<128	<272	<214	-
Total Chlorophenols (ng/Rm^3) (1)	<347	<333	<349	<343	-
Total PAHs (ng/Rm^3) (1)	<642	<356	<756	<585	-
VOCs (µg/Rm^3) (1)	<114	<65.0	<86.4	<88.6	-
Aldehydes (µg/Rm^3) (1)	<95.8	<92.3	<105	<97.8	-
Total VOCs (µg/Rm^3) (1) (4)	<210	<157	<191	<186	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	0	0	0	0	50

* based on process data provided by Covanta

(1) dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

(2) dry basis as equivalent methane (average of each 60 minute test with data recorded in 1-minute intervals)

(3) calculated using the NATO/CCMS (1989) toxicity equivalence factors and the full detection limit for those isomers below the analytical detection limit, dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

(4) Includes all components from the volatile organic compounds test list in the ECA (i.e. Volatile Organic Sampling Train and Aldehyde Sampling train components).

The average results for the tests conducted at Boiler No. 2, along with the respective in-stack emission limits, are summarized in the following table:

Parameter	Test No. 1	Test No. 2	Test No. 3	Average	In-Stack Limit
Total Power Output (MWh/day)*	-	-	-	376	-
Average Combustion Zone Temp. (°C)*	-	-	-	1311	-
Steam (tonnes/day)*	-	-	-	775	-
MSW Combusted (tonnes/day)*	-	-	-	184	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	709	-
Carbon Injection (kg/day)*	-	-	-	127	-
Lime Injection (kg/day)*	-	-	-	4169	-
Filterable Particulate (mg/Rm^3) (1)	0.28	<0.40	0.26	<0.31	9
PM_{10} with Condensable (mg/Rm^3) (1)	<3.69	<4.46	<6.70	<4.95	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<3.62	<4.25	<6.64	<4.84	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.10	<0.11	<0.11	<0.11	-
Ammonia (mg/Rm^3) (1)	0.36	0.55	1.76	0.89	-
Cadmium (µg/Rm^3) (1)	0.030	<0.021	0.014	<0.022	7
Lead (µg/Rm^3) (1)	0.26	0.15	0.11	0.17	50
Mercury (µg/Rm^3) (1)	<0.053	<0.052	<0.054	<0.053	15
Antimony (µg/Rm^3) (1)	0.40	<0.042	<0.044	<0.16	-
Arsenic (µg/Rm^3) (1)	<0.042	<0.042	<0.044	<0.043	-
Barium (µg/Rm^3) (1)	1.31	1.39	0.15	0.95	-
Beryllium (µg/Rm^3) (1)	<0.042	<0.042	<0.044	<0.043	-
Chromium (µg/Rm^3) (1)	0.72	0.62	0.87	0.74	-
Cobalt (µg/Rm^3) (1)	<0.042	<0.042	<0.044	<0.043	-
Copper (µg/Rm^3) (1)	1.96	1.67	1.94	1.86	-
Molybdenum (µg/Rm^3) (1)	6.52	7.01	7.12	6.88	-
Nickel (µg/Rm^3) (1)	0.42	0.47	1.10	0.66	-
Selenium (µg/Rm^3) (1)	<0.21	<0.21	<0.22	<0.21	-
Silver (µg/Rm^3) (1)	<0.042	<0.042	<0.044	<0.043	-
Thallium (µg/Rm^3) (1)	<0.042	<0.042	<0.044	<0.043	-
Vanadium (µg/Rm^3) (1)	<0.021	<0.021	<0.022	<0.021	-
Zinc (µg/Rm^3) (1)	3.16	2.65	3.21	3.01	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<2.22	<3.35	<2.10	<2.56	60
Total Chlorobenzenes (ng/Rm^3) (1)	<104	<77.1	<114	<98.1	-
Total Chlorophenols (ng/Rm^3) (1)	<168	<165	<164	<166	-
Total PAHs (ng/Rm^3) (1)	<178	<215	<208	<201	-
VOCs (µg/Rm^3) (1)	<49.2	<55.3	<34.9	<46.5	-
Aldehydes (µg/Rm^3) (1)	<36.5	<37.2	<44.5	<39.4	-
Total VOCs (µg/Rm^3) (1) (4)	<85.7	<92.5	<79.4	<85.9	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	0	0	0	0	50

* based on process data provided by Covanta

(1) dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

(2) dry basis as equivalent methane (average of each 60 minute test with data recorded in 1-minute intervals)

(3) calculated using the NATO/CCMS (1989) toxicity equivalence factors and the full detection limit for those isomers below the analytical detection limit, dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

(4) Includes all components from the volatile organic compounds test list in the ECA (i.e. Volatile Organic Sampling Train and Aldehyde Sampling train components).

A summary of the minimum, average and maximum concentrations for the combustion gases measured by the DYEC CEMS with in-stack limits listed in the ECA is provided below for the two units.

Boiler No.	Parameter	Minimum	Average	Maximum	In-Stack Limit
Boiler No. 1	Carbon Monoxide (mg/Rm^3) (1)	6	9.7	17.5	40
	Hydrogen Chloride (mg/Rm^3) (2)	1.7	2.2	2.5	9
	Nitrogen Oxides (mg/Rm^3) (2)	111	111	112	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0.3	0.6	35
Boiler No. 2	Carbon Monoxide (mg/Rm^3) (1)	7.3	11.7	23.0	40
	Hydrogen Chloride (mg/Rm^3) (2)	0.5	1.8	3.1	9
	Nitrogen Oxides (mg/Rm^3) (2)	109	110	111	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0.2	0.8	35

(1) 4-hour average measured by DYEC CEMS, dry at 25°C and 1 atmosphere adjusted to 11% oxygen by volume
(2) 24-hour average measured by DYEC CEMS, dry at 25°C and 1 atmosphere adjusted to 11% oxygen by volume

The emission data measured at each Boiler BH Outlet during the testing program was combined and used to assess the emissions from the Main Stack against the current point of impingement criteria detailed in Ontario Regulation 419/05.

Dispersion modelling was completed using the CALPUFF model (using Version 7.2.1 level 141010 as approved by the MECP in December 2021) by Golder Associates. A summary of the results are provided in the tables appended to this report (Appendix 27) based on calculated ground level Point of Impingement (POI) concentrations for the average total Main Stack emissions. As shown in the tables, the calculated impingement concentrations for all of the contaminants were well below the relevant MECP standards.

In summary, the key results of the emission testing program are:

- The facility was maintained within the operational parameters defined by the amended ECA that constitutes normal operation during the stack test periods. Testing was conducted at a steam production rate of greater than 790 tonnes of steam per day for each Boiler (approximately 97.8% of maximum continuous rating). The maximum continuous rating for the facility is 1614.7 tonnes of steam per day for the two Boilers combined (33.64 tonnes of steam per hour or 807.4 tonnes per day for each Boiler). Note the November 30, 2021 steam production rate for Boiler No. 2 (679 tonnes of steam per day) was excluded as the process was down for a period of time due to a crane malfunction.
- The in-stack concentrations of the components listed in the ECA were all below the concentration limits provided in Schedule C of the ECA.
- Using CALPUFF dispersion modelling techniques, the predicted maximum point of impingement concentrations, based on the average test results for both boilers, show DYEC to be operating well below all current standards in Regulation 419/05 under the Ontario Environmental Protection Act and other MECP criteria including guidelines and upper risk thresholds.

Tables referenced in this report for the tests conducted at Boiler No. 1 and Boiler No. 2 are provided in Appendix 1 and Appendix 2, respectively.

1. INTRODUCTION

ORTECH Consulting Inc. (ORTECH) completed the annual compliance emission testing program at the Durham York Energy Centre (DYEC) located in Courtice, Ontario between November 28 and December 10, 2021. The emission testing program was performed to satisfy the requirements of the Ontario Ministry of the Environment, Conservation and Parks (MECP) Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX. Section 7(1) of the ECA states that "the owner shall perform annual source testing, in accordance with the procedures and schedule outlined in the attached Schedule E, to determine the rates of emissions of the test contaminants from the stack. The program shall be conducted not later than six months after the commencement date of operation of the facility/equipment and subsequent source testing programs shall be conducted once every calendar year thereafter". This program is the thirteenth comprehensive Schedule E source testing program conducted at the facility. A list of the test programs conducted by ORTECH to date is provided below:

Test Program	Test Date	ORTECH Report No.
2015 Compliance	September/October 2015	21546
2016 Voluntary	May 2016	21656
2016 Compliance	October/November 2016	21698
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2019 Voluntary	June 2019	21936
2019 Compliance	September 2019	21960
2020 Voluntary	June 2020	22001
2020 Compliance	November 2020	22050
2021 Voluntary	June 2021	22081
2021 Compliance	November/December 2021	22085

Source testing was performed on the Baghouse (BH) Outlet of Boiler No. 1 and BH Outlet of Boiler No. 2 for the test contaminants listed in Schedule D of the ECA. Triplicate emission tests were also completed for total hydrocarbons at the Quench Inlet of each Boiler.

Prior to commencing the test program, a Pre-Test Plan letter was submitted to the MECP stating that the sampling program would follow the procedures detailed in ORTECH Pre-Test Plan No. 22050, "Covanta Durham York Renewable Energy Limited Partnership Compliance Emission Testing in Accordance with Amended Environmental Compliance Approval (Air) No. 7306-8FDKNX", dated September 8, 2020. Provided in Appendix 3 is a copy of the Pre-Test Plan acceptance email received from the MECP, dated October 6, 2021, indicating acceptance of the proposed sampling strategy. A copy of the Amended Environmental Compliance Approval, including amendment notices, is also provided in Appendix 3.

Triplicate emission tests were completed for each of the test parameters listed in Schedule D of the ECA between November 28 and December 10, 2021.

2. PROCESS DESCRIPTION

DYEC is a thermal treatment facility with a maximum thermal treatment rate of 140,000 tonnes/year of municipal solid waste (MSW), as established by the Amended ECA. ECA Notice No. 2, dated December 23, 2021, allows the facility to receive and thermally treat up to 142,000 tonnes/year of MSW for the 2021 operating year. The maximum continuous rating (MCR) for the facility is defined as 218 tonnes per day, per unit, of MSW with a heat content of 13 MJ/kg per train. The steam production MCR is 33.64 tonnes per hour for each Boiler.

The facility was built to operate on a continuous basis; 24 hours/day, seven days/weeks, 365 days/year. Waste may be delivered six days per week between 7:00 am to 7:00 pm. The proposed operating schedule may be adjusted depending on demand and facility needs within the established setup indicated in the ECA (i.e., waste can only be received from Monday to Saturday - excluding statutory holidays, and between 7:00 am and 7:00 pm - ECA's Condition 4(1)(b)).

MSW arrives at the facility via covered refuse trucks and is deposited in a storage pit within the receiving building. Facility operators manage MSW by moving and mixing MSW within the storage pit with the overhead grapple cranes. The MSW is lifted from the pit by crane and fed into the fuel hopper for each thermal treatment train.

The facility consists of two thermal treatment trains, each equipped with independently operated boilers/furnaces and air pollution control equipment. The treated exhaust gases are vented to a common 87.6 m stack and released to atmosphere.

2.1 Control Equipment

Flue gasses pass through a dry recirculating type scrubber for acid control and a fabric filter for particulate control. A Selective Non-Catalytic Reduction System (SNCR) with ammonia injection is used for NO_X control. Powdered carbon is injected for mercury, and dioxin and furan control between the dry recirculating type scrubber and the fabric filter.

2.2 Continuous Emission Monitoring Systems

Continuous Emissions Monitors are installed in the vertical ductwork between the economizer and dry recirculating type scrubber (location referred to as the Quench Inlet), and in the vertical ductwork between the fabric filter and the ID fan (location referred to as the BH Outlet).

A summary of the CEMS installed at each location is provided below:

Unit	Location	Analyzer Manufacturer	Model No.	Serial No.	Parameter	Range
1	Quench Inlet	Environmental SA	MIR 9000	2684	CO (Low)	0-500 ppm
					CO (High)	0-2000 ppm
					HCl	0-1500 ppm
					O_2 (Dry)	0-25%
		Ametek	RM CEM O_2/IQ	10217710-2	O_2 (Wet)	0-25%
1	BH Outlet	Environmental SA	MIR 9000	2686	NO_X	0-500 ppm
					SO_2	0-200 ppm
					HCl	0-100 ppm
					HF	0-100 ppm
					CO (Low)	0-500 ppm
					CO (High)	0-2000 ppm
					O_2 (Dry)	0-25%
					CO_2	0-25%
		Ametek	RM CEM O_2/IQ	10217710-1	O_2 (Wet)	0-25%
		Tethys	EXM400	F130304	NH_3	0-50 ppm
		OSI	OFS-2000W	13020629	Flow	0-40 m/s
		Teledyne	Light Hawk 560	5602492	Opacity	0-100%
		Environmental SA	Graphite 52M	647	THC	0-100 ppm
		Environmental SA	Amesa	1825-269	Dioxin/Furan	0-10 ng/m^3
2	Quench Inlet	Environmental SA	MIR 9000	2685	CO (Low)	0-500 ppm
					CO (High)	0-2000 ppm
					HCl	0-1500 ppm
					O_2 (Dry)	0-25%
		Ametek	RM CEM O2/IQ	10218084-1	O_2 (Wet)	0-25%
2	BH Outlet	Environmental SA	MIR 9000	2687	NO_X	0-500 ppm
					SO_2	0-200 ppm
					HCl	0-100 ppm
					HF	0-100 ppm
					CO (Low)	0-500 ppm
					CO (High)	0-2000 ppm
					O_2 (Dry)	0-25%
					CO_2	0-25%
		Ametek	RM CEM O2/IQ	10218084-2	O_2 (Wet)	0-25%
		Tethys	EXM400	F130303	NH_3	0-50 ppm
		OSI	OFS-2000W	13020633	Flow	0-40 m/s
		Teledyne	Light Hawk 560	5602493	Opacity	0-100%
		Environmental SA	Graphite 52M	648	THC	0-100 ppm
		Environmental SA	Amesa	1825-284	Dioxin/Furan	0-10 ng/m^3

3. SAMPLING LOCATIONS

The BH Outlet sampling ports are located on the vertical circular ductwork between the baghouse outlet and the ID Fan inlet. There are two 6-inch ports, located 90 degrees apart, at the same elevation and a single 4-inch port located approximately 0.8 m upstream of the 6-inch ports. The two 6-inch sampling ports were used for isokinetic sampling and the 4-inch ports were used for all non-isokinetic sampling.

The BH Outlet duct has an inside diameter of 1.37 meters (54 inches) at the sampling ports. The two 6-inch ports are approximately 4.4 duct diameters (6.1 meters) downstream and 0.68 duct diameters (0.94 meters) upstream from the nearest flow disturbances.

The Quench Inlet sampling ports are located on the circular ductwork between the Boiler Outlet and the Recirculating Type Dry Scrubber Inlet. There are two 6-inch ports, located 90 degrees apart, at the same height. The Quench Inlet duct has a diameter of 1.37 meters (54 inches) at the sampling ports. The ports are located approximately 3.8 duct diameters (5.2 meters) downstream and 4.7 duct diameters (6.4 meters) upstream from the nearest flow disturbances.

The sampling ports are located at a "non-ideal" location as defined by the Ontario Source Testing Code. An "ideal" location is defined as being at least eight stack diameters downstream and at least two stack diameters upstream of flow disturbances.

Cyclonic flow checks were performed by ORTECH at the BH Outlet and Quench Inlet sampling locations on each Boiler on September 22, 2015. The cyclonic flow checks were performed using an S-type pitot tube and manometer following the procedures detailed in Ontario Source Testing Code Method 1. Briefly, the pitot tube was positioned at each sampling point so that the planes of the face openings were parallel to the cross-sectional axis of the duct. The pitot tube was then rotated about its longitudinal axis until the manometer reading was zero. The absolute value of the rotational angle was recorded to the nearest degree at each point. The average of the recorded angles was calculated at each location. If the average angle is less than 15°, cyclonic flow is not present and sampling may proceed as normal.

The results for the cyclonic flow checks are summarized below:

Sampling Location	Performance Specification	Average Angle (°)	Cyclonic Flow Present
Boiler No. 1 Quench Inlet	Average <15°	6.6	No
Boiler No. 2 Quench Inlet	Average <15°	8.4	No
Boiler No. 1 BH Outlet	Average <15°	8.8	No
Boiler No. 2 BH Outlet	Average <15°	8.1	No

In addition, reverse flow was not observed at any point at any of the four sample locations during the cyclonic flow checks or during any test.

4. SAMPLING PROCEDURES

4.1 General

This section outlines the sampling procedures as well as pre-test and on-site internal quality assurance/quality control (QA/QC) procedures which were utilized in the testing program. The procedures described in this section ensured that representative samples were collected and that the integrity of the collected samples was maintained. The use of these sampling procedures significantly reduced the possibility of sample contamination from external sources. Sample handling and documentation requirements were key factors in this program.

Triplicate emission tests were completed for particulate matter, metals, semi-volatile organic compounds, acid gases, volatile organic compounds, aldehydes and combustion gases at the BH Outlet of each Boiler. Triplicate emission tests were also completed for total hydrocarbons at the Quench Inlet of each Boiler. The contaminant groups included in the emission test program and the reference test methods used are summarized below:

Test Groups	Reference Method
Particulate and Metals	US EPA Method 29
$PM_{2.5}$/PM_{10} and Condensable Particulate	US EPA Methods 201A and 202
Semi-Volatile Organic Compounds	Environment Canada Method EPS 1/RM/2
Volatile Organic Compounds	US EPA SW-846 Method 0030 (SLO VOST modification)
Aldehydes	NCASI Method ISS/FP-A105.01
Halides and Ammonia	US EPA Method 26A
Combustion Gases:	
Oxygen and Carbon Dioxide	Facility CEM
Carbon Monoxide	Facility CEM
Sulphur Dioxide	Facility CEM
Nitrogen Oxides	Facility CEM
Total Hydrocarbons	ORTECH per US EPA Method 25A

Since relative accuracy and system bias testing was conducted in June 2021, the data recorded by the DYEC CEMS was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide. Note the DYEC CEMS data for the days when isokinetic testing was performed at each unit (November 29 to December 2, 2021 for Boiler No. 1, and November 29 to December 2, 2021 and December 9 to December 10, 2021 for Boiler No. 2) was used to determine the minimum, average and maximum concentrations of the combustion gases listed in the ECA. Concentration data measured by ORTECH on November 28 and November 29, 2021 was used to assess against the total hydrocarbons (organic matter) in-stack emissions limit detailed in Schedule C of the ECA.

4.2 Particulate and Metals

Particulate and metals were sampled using the sampling procedures outlined in US EPA Method 29. Major components of the sampling train were as follows:

- A glass nozzle and probe liner assembly
- A quartz fiber filter with a low metal background
- The first impinger was initially empty to collect moisture
- The second and third impingers initially contained 100 mL each of 5% nitric acid/10% hydrogen peroxide solution to collect metals
- The fourth impinger was initially empty
- The fifth and sixth impingers initially contained 100 mL each of 4% potassium permanganate/10% sulphuric acid solution to collect mercury
- The seventh impinger contained silica gel

Each test for particulate matter and metals involved the collection of stack gas sampled isokinetically at twelve points centered on equal areas along each of two traverses (at 90° to each other) of the BH Outlet duct. Each of the twenty-four points was sampled for 7.5 minutes for a total actual sampling time of one hundred and eighty minutes.

At 2.5 minute time increments throughout each test the following information was measured and recorded on field data sheets:

- Elapsed sampling time
- Dry gas meter volume
- Pitot tube pressure
- Stack gas temperature
- Probe, oven and impinger temperatures
- Dry gas meter temperatures
- Control module orifice pressure
- Sampling pump vacuum

The particulate and metals field data sheets are provided in Appendix 4.

At the start and finish of sampling each traverse the sampling train was leak-checked. A valid leak-check as specified by the sampling method is a leakage rate of less than 0.00057 cubic meters per minute (m^3/min) or 4% of the estimated sampling rate, whichever is less. All of the leak-checks, as detailed on the field data sheets, were acceptable.

A blank train was prepared and the samples recovered in a manner identical to the test sampling trains for each Boiler.

4.3 Particle Size Distribution

Particle Size Distribution (PSD) tests were performed at each of the BH Outlet sample locations in accordance with the test procedures described in US EPA Method 201A using PM_{10} and $PM_{2.5}$ combined cyclone heads and US EPA Method 202. Sampling was conducted for approximately one hundred and twenty minutes at six points across each traverse of the duct using isokinetic dwell time sampling. At approximately ten minute time increments throughout each test the following information was measured and recorded on field data sheets:

- Elapsed sampling time
- Dry gas meter volume
- Pitot tube pressure
- Stack gas temperature
- Probe, oven and impinger temperatures
- Dry gas meter temperatures
- Control module orifice pressure
- Sampling pump vacuum

Field data sheets for the PSD tests are provided in Appendix 5.

A blank train was prepared and samples recovered in a manner identical to the test sampling trains for each Boiler.

4.4 Semi-Volatile Organic Compounds

Semi-volatile organic compounds (SVOC), including dioxins and furans, polychlorinated biphenyls (PCBs), chlorobenzenes (CBs), chlorophenols (CPs) and polycyclic aromatic hydrocarbons (PAHs) were sampled at the BH Outlet of each Boiler using the sampling train and sampling procedures outlined in Environment Canada Report EPS 1/RM/2. Major components of the sampling train were as follows:

- A glass nozzle and probe liner assembly
- A clean and proven glass fiber filter
- Amberlite XAD-2 sorbent resin was used in a trap to collect semi-volatile organics
- The first impinger was initially empty
- The second impinger contained 100 mL of ethylene glycol
- The third impinger was initially empty
- The fourth impinger contained silica gel

All test train and auxiliary glassware were cleaned according to the methods as outlined in Environment Canada EPS 1/RM/2 except that the methods were modified by combining proofing extracts prior to analysis for the target analytes.

Each test for semi-volatile organic compounds at the BH Outlet involved the collection of stack gas sampled isokinetically at twelve points centered on equal areas along each of two traverses (at 90° to each other) of the duct. Each of the twenty-four points was sampled for ten minutes for a total actual sampling time of two hundred and forty minutes.

At five minute time increments the following information was measured and recorded on field data sheets:

- Elapsed sampling time
- Dry gas meter volume
- Pitot tube pressure
- Stack gas temperature
- Probe, oven and impinger outlet temperatures
- XAD-2 trap outlet temperature
- Dry gas meter temperatures
- Control module orifice pressure
- Sampling pump vacuum

Field data sheets for the SVOC tests are provided in Appendix 6.

At the start and finish of sampling each traverse, the sampling train was leak-checked. A valid leak-check as specified by the sampling method is a leakage rate of less than 0.00057 m^3/min or 4% of the estimated average sampling rate, whichever is less. All of the leak-checks for the tests reported, as detailed on the field data sheets, were acceptable.

A blank train was prepared in a manner identical to the test trains for each Boiler. It was assembled, transported and left at the sampling site for a period of time equal to the test trains. The blank train was treated at the sampling site in the same manner as the test trains and a gas volume was drawn through the blank train approximately equal to the leak-check volume for the test trains.

4.5 Acid Gases

Hydrogen fluoride, hydrogen chloride and ammonia were sampled together using the sampling train and sampling procedures outlined in US EPA Method 26A. Major components of the test train were as follows:

- A glass nozzle and probe liner assembly
- The first and second impingers contained 100 mL of 0.1N H_2SO_4
- The third impinger was initially empty
- The fourth impinger contained silica gel

At five minute time increments throughout each test the following information was measured and recorded on field data sheets:

- Elapsed sampling time
- Dry gas meter volume
- Pitot tube pressure
- Stack gas temperature
- Probe, oven and impinger temperatures
- Dry gas meter temperatures
- Control module orifice pressure
- Sampling pump vacuum

Field data sheets for the acid gases tests are provided in Appendix 7.

At the start and finish of each test the sampling train was leak-checked. A valid leak-check as specified by the sampling method is a leakage rate of less than 0.00057 m^3/min or 4% of the estimated average sampling rate, whichever is less.

A blank train was prepared and samples recovered in a manner identical to the test sampling trains for each Boiler.

4.6 Volatile Organic Compounds

Volatile Organic Compound (VOC) sampling was performed in accordance with US EPA SW-846 Method 0030 (SLO-VOST modification). Briefly, the sampling method involved withdrawing a sample of the stack gas through a heated glass lined sampling probe containing a glass wool plug to remove particulate material. The sample was then passed through a water cooled condenser and a Tenax GC adsorbent tube, as the primary volatile organic collection device. Condensate was collected in an initial condensate trap and the sample was then drawn through a second condenser and a combined secondary Tenax GC/charcoal adsorbent tube, as the secondary volatile organic collection device. The sampled gas stream then passed through a silica gel trap to remove any remaining traces of moisture prior to the rotameter, pump and dry gas meter.

During each test, a single forty minute run was completed at an approximate flowrate of 0.5 L/min. A fourth run was also conducted and the tube pair was archived in case a sample was lost during desorption or analysis. The analytical results from the three runs performed were combined and used to calculate test average results for the respective source. Note the samples for Test No. 1, Test No. 2 and Test No. 3 were analyzed and reported. The Test No. 4 samples for each Unit were archived.

At five minute time increments throughout sampling each pair of tubes, the following information was measured and recorded:

- Elapsed sampling time
- Dry gas meter volume
- Stack gas temperature
- Probe and first condenser outlet temperatures
- Dry gas meter temperatures
- Control module orifice pressure
- Sampling pump vacuum

The sampling train components were cleaned using the procedures in US EPA SW-846 Method 0030, Volatile Organic Sampling Train (VOST).

Field data sheets for the VOST tests are provided in Appendix 8.

Blank tube samples analyzed for the program included two pairs of field blank tubes, a trip blank pair of tubes and one laboratory blank pair of tubes.

4.7 Aldehydes

Some of the compounds listed as VOC's (acetaldehyde, formaldehyde and acrolein) are more commonly classified as aldehydes. These compounds were captured in a separate test train in accordance with NCASI Method ISS/FP-A105.01.

Major components of the test train were as follows:

- A Teflon probe liner assembly was used.
- The first, second and third impingers contained approximately 15 mL each of o-Benzylhydroxylamine (BHA).
- The fourth impinger contained silica gel

A single test for aldehydes involved the collection of gas sampled at a single point in the duct at a sampling flowrate of approximately 0.5 liters per minute for sixty minutes.

At five minute time increments throughout each test, the following information was measured and recorded for the train:

- Elapsed sampling time
- Dry gas meter volume
- Stack gas temperature
- Probe, oven and impinger outlet temperatures
- Dry gas meter temperature
- Control module orifice pressure
- Sampling pump vacuum

Field data sheets for the aldehyde tests are provided in Appendix 9.

4.8 Combustion Gases

In June 2021, relative accuracy and system bias testing was conducted on the Continuous Emission Monitoring Systems (CEMS) installed at the Quench Inlet and BH Outlet of each Boiler. DYEC CEMS met the performance parameters detailed in Schedule F of the ECA. Therefore, the data recorded by the DYEC CEMS was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide.

Combustion gases, including carbon dioxide, carbon monoxide, hydrogen chloride, nitrogen oxides, oxygen, sulphur dioxide and total hydrocarbons, were measured continuously at the BH Outlet during the emission testing program by the DYEC CEMs. Oxygen was also measured continuously by the DYEC CEMS at the Quench Inlet.

DYEC provided 1-hour average concentrations for each clock hour using the 1-minute combustion gas data measured by the DYEC CEMs during each isokinetic test day at each Boiler. The data measured by the DYEC CEMS, from November 29, 2021 at 00:00 to December 2, 2021 at 23:00, was used to assess against the in-stack emission limit stated in the ECA for Boiler No. 1. The data measured by the DYEC CEMS, from November 29, 2021 at 00:00 to December 2, 2021 at 23:00 and December 9, 2021 at 00:00 to December 10, 2021 at 23:00, was used to assess against the in-stack emission limit stated in the ECA for Boiler No. 2.

A 24-hour rolling average was determined for hydrogen chloride, nitrogen oxides and sulphur dioxide using the calculated 1-hour average data to compare to the in-stack emission limits stated in the ECA. A 4-hour rolling average was determined for carbon monoxide using the calculated 1-hour average data to compare to the in-stack emission limit stated in the ECA.

Total hydrocarbon concentrations were measured by ORTECH following the procedures detailed in US EPA Method 25A. Triplicate one-hour tests were conducted at the Quench Inlet and BH Outlet of each Boiler on November 28 and November 29, 2021. The total hydrocarbon data measured by ORTECH at the Quench Inlet sample locations was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA.

5. SAMPLE RECOVERY AND ANALYSIS

All sample analysis was performed by ALS Canada Ltd. Copies of Sample Logs/Chain of Custody Forms for all samples submitted for chemical analysis are provided in Appendix 10.

5.1 Particulate and Metals

Before loading of the field test trains commenced, recovery data sheets were prepared to record initial weights of the test train components. These sheets were also used during sample recovery to record final weights and determine moisture gains and sample volumes. The particulate and metals train recovery data sheets are provided in Appendix 11.

Following the conclusion of each test performed with the metals train, the probe was disconnected and all openings sealed with Teflon tape. The test trains, including the probes, were taken to the on-site ORTECH mobile laboratory for sample recovery. The train recovery procedure is briefly described as follows.

The test trains were visually inspected to ensure that no damage occurred during transportation. The condition of the test train was noted. Filter and impinger content colors were recorded. The filter housing was disassembled and the filter carefully transferred to its pre-test petri dish with the use of Teflon coated tweezers.

All the impingers were wiped dry on the outside then weighed and the results used to determine the stack gas moisture content.

The front half of the sampling train was brushed and rinsed thoroughly with acetone. A nylon bristle probe brush was used to assist in dislodging particulate material which may have adhered to the inside surfaces of the nozzle and probe assembly. The front half was then rinsed in triplicate using 0.1 N nitric acid but no brushing was performed.

The contents of the first four impingers were combined. Triplicate rinses of the impingers and connecting glassware back to and including the Teflon filter support was performed with 0.1 N nitric acid and combined with the impinger solution sample.

The contents of the fifth and sixth impingers were combined. The impingers with connecting glassware were then rinsed in triplicate with approximately 100 mL of fresh potassium permanganate solution followed by a triplicate rinse with 100 mL of distilled, de-ionized water. All of the glassware rinses were added to the sample container.

Any brown residue which was present in the fifth and sixth impingers was removed by incrementally rinsing with small amounts of 8 N hydrochloric acid. These acid rinses were added to a separate sample bottle which initially contained 150 mL of distilled, de-ionized water. The impingers were then rinsed with distilled, de-ionized water into the same sample container.

Each sample container was sealed, labeled and the fluid level marked (where appropriate) once that portion of the recovery was completed. The samples were then checked against the master sample log/chain of custody form and refrigerated until they were delivered to the analytical laboratory for analysis.

The test samples were prepared and analyzed for metals according to US EPA Method 29 (modified). The inorganic analytical reports are provided in Appendix 12.

5.2 Particle Size Distribution

Prior to loading the field test trains, recovery data sheets were prepared to record initial weights of the test train components. These sheets were also used during sample recovery to record final weights and determine moisture gains and sample volumes. The train recovery data sheets are provided in Appendix 13.

The particle size distribution (PSD) samples were recovered in much the same way as the particulate samples from the particulate and metals trains. Following the conclusion of each test performed with the PSD trains, the probe was disconnected and all openings sealed with Teflon tape. The sample recoveries were performed in the on-site ORTECH sample recovery trailer.

The test trains were visually inspected to ensure that no damage during movement had occurred. The recovery procedure is briefly described as follows.

The condition of the test train was noted and the filter and impinger colours were recorded. The nozzle, PM_{10} cyclone walls, collection cup and outside of the exit stem was brushed and rinsed thoroughly with acetone into a glass sample container to determine particulate greater than PM_{10}. The PM_{10} cup and connecting parts were rinsed with acetone in a glass sample container to determine particulate less than PM_{10} but greater than $PM_{2.5}$. The $PM_{2.5}$ cup and connecting parts up to the back-up filter were rinsed with acetone into a glass sample container to determine particulate less than $PM_{2.5}$. The back-up filter was transferred to its original petri dish.

The impingers were wiped dry on the outside then weighed and the results used to determine the stack gas moisture content. The back half of the sampling train was then purged with nitrogen at 14 lpm for 1 hour as soon as possible after the completion of each test.

The back-half of the sampling train was recovered following the procedures detailed in US EPA Method 202 for condensable particulate. The contents of the first impinger were poured into a glass sample bottle and rinses of the impinger and connecting glassware were performed with water which was added to the sample. The glassware was then rinsed with acetone and the rinse was repeated in duplicate with hexane. The acetone and hexane rinses were combined into a single glass sample bottle.

Each sample container was sealed, labeled and the fluid level marked (where appropriate) once that portion of the recovery was completed. The samples were then checked against the master sample log/chain of custody form and refrigerated until they were delivered to the analytical laboratory for analysis.

The particle size and condensable particulate matter results are presented with the inorganic analytical reports provided in Appendix 12.

5.3 Semi-Volatile Organic Compounds

Prior to loading the field test trains, recovery data sheets were prepared to record initial weights of the test train components. These sheets were also used during sample recovery to record final weights and determine moisture gains and sample volumes. The train recovery data sheets are provided in Appendix 14.

Following the conclusion of each test performed with the semi-volatile organics train, the probe was disconnected and all openings sealed with Teflon tape. The test trains, including the probes, were taken to the on-site ORTECH mobile laboratory for sample recovery. The train recovery procedure is briefly described as follows.

The condition of the test train was noted. Filter, XAD-2 trap and impinger content colours were recorded. The filter housing was disassembled and the filter carefully transferred, with the use of Teflon coated tweezers, to a piece of pre-cleaned aluminum foil. Each filter was then folded in half onto itself within the foil, the foil ends crimped, then placed in a pre-cleaned glass petri dish. Both the foil containing the filter(s) and the glass Petri dish were labeled.

All of the impingers were wiped dry on the outside then weighed and the results used to determine the stack gas moisture content.

The front half of the sampling train, up to but not including the trap, was brushed and rinsed thoroughly with acetone. A Teflon probe brush was used to assist in dislodging particulate material that may have adhered to the inside surfaces of the cyclone bypass and filter top assembly. This front half rinse was then repeated using hexane, with no brushing, and all rinsing was combined with the probe rinse sample. The filter bottom, filter bottom u-tube and trap inlet stem were soaked for five minutes in each of acetone and hexane then rinsed.

The XAD-2 trap was drained of excess cooling water and weighed. The ends were then sealed with Teflon tape and the trap was labeled and wrapped in aluminum foil. Since ORTECH uses a one piece trap and condenser, the five minute soak of this component was performed by the analytical laboratory.

The contents of the first three impingers were combined in a pre-cleaned amber glass sample bottle. Triplicate rinses of the impingers and connecting glassware back to and including the trap bottom u-tube were performed first with HPLC water, which was added to the impinger solution sample, and then with acetone followed by hexane. The acetone and hexane rinses were combined in a separate sample bottle from the impinger solutions.

Each sample container was sealed and labeled once that portion of the recovery was completed. The samples were then checked against the master sample log/chain of custody form then refrigerated until they were delivered to the analytical laboratory for analysis.

Semi-volatile organic analyses were performed on single composite extracts for each test according to EPS 1/RM/3 and EPS 1/RM/23. These methods were modified slightly to include other semi-volatile organic compounds following the Environment Canada NITEP/Mid-Connecticut combustion test procedures. These analytical improvements have been implemented over many years and have been identified and approved through laboratory accreditation and acceptance by the MECP.

The SVOC analytical reports are provided in Appendix 15.

5.4 Acid Gases

Following the conclusion of each test performed with the acid gas train, the probe was disconnected and all openings sealed with Teflon tape. The test trains were taken to the on-site ORTECH mobile laboratory for sample recovery. The train recovery procedure is briefly described as follows.

The test trains were visually inspected to ensure that no damage occurred during transportation. The condition of the test train was noted and the impinger content colors were recorded. All the impingers were wiped dry on the outside then weighed and the results used to determine the stack gas moisture content.

The contents of the first three impingers were combined. Triplicate rinses of the impingers and connecting glassware back to and including the Teflon filter support was performed with high purity water and combined with the impinger solution sample.

Each sample container was sealed, labeled and the fluid level marked (where appropriate) once that portion of the recovery was completed. The samples were then checked against the master sample log/chain of custody form and refrigerated until they were transported to the laboratory for analysis.

Analysis for hydrogen fluoride, hydrogen chloride and ammonia was performed via ion chromatography.

Train recovery data sheets are provided in Appendix 16. The acid gases analytical results are presented with inorganic analytical reports in Appendix 12.

5.5 Volatile Organics Train Recovery

Following the conclusion of each tube pair run performed with the volatile organic sampling train (VOST), the tubes were removed from the train, capped and placed in appropriately labeled test tubes which were also capped. The tubes were sent to the analytical laboratory for volatile organic compound (VOC) analysis.

The VOST samples were analyzed via SW846 Method 5041A/8260B. Briefly, after spiking with internal and surrogate standards, the traps were thermally desorbed through a clam shell heater then through a chilled aqueous purge to remove the bulk of the moisture onto a secondary trap. These secondary traps are further dried using a counter current flow of helium. The secondary traps are then thermally desorbed into a VOC sample concentrator and again the VOCs are thermally transferred/concentrated onto a GC column. The VOC compounds are separated via gas chromatography (GC) and analyzed via GC/MS.

The condensate collected from each tube pair run was carefully transferred to a glass bottle and combined as a single sample for each sampling location. The condensate samples were archived for future analysis if necessary.

The VOST analytical report is provided in Appendix 17.

5.6 Aldehydes

Following the conclusion of each test performed with the Aldehyde Train the probe was disconnected and all openings were sealed with Teflon tape. The test train was then recovered on site in an ORTECH sample recovery trailer separate from all other test train recoveries and solvents. The train recovery procedure is briefly described as follows.

The condition of the test train was noted. All the impingers were wiped dry and weighed. The contents of the impingers were transferred into a glass sample container. The probe and impingers were rinsed with a small amount of DI water followed by a small amount of hexane into the same sample container.

Each sample container was sealed, labeled and the fluid level marked (where appropriate) once that portion of the recovery was completed. The samples were then checked against the master sample log/chain of custody form and refrigerated until they were transported to the laboratory for analysis.

Analysis for formaldehyde, acetaldehyde and acrolein was performed via GC/MS. The sample recovery data sheets are provided in Appendix 18 and the analytical results are presented in Appendix 19.

6. INTERNAL AND EXTERNAL QA/QC PROGRAM

6.1 General

As with other emission testing programs conducted by ORTECH, a comprehensive internal quality assurance/quality control (QA/QC) program was included.

Blank sampling trains were recovered and analyzed or reagent blanks were analyzed using the same procedures as the test trains to provide background concentrations of the emission test components.

6.2 Pre-Test Activities

Prior to the commencement of the emission testing program, the following activities were performed:

- Preparation, pre-cleaning and proofing of the manual stack sampling trains and sample containers.
- Preparation and quality checks of chemicals, reagents, filters and XAD-2 adsorbent resin.
- Calibration of all sampling and monitoring equipment.
- Development (and review) of data acquisition, data reduction and summary procedures.
- Development of internal QA/QC field data sheets.
- Review of equipment calibration logs.
- Review of proposed field and laboratory procedures.

All proving data for the Semi-Volatile Organics Train glassware and auxiliary equipment was deemed acceptable prior to the test program.

A proof rinse of the sampling probes was collected and archived for future analysis if necessary.

For each batch of VOST tubes, a minimum of 1 pair in 10 was analyzed to demonstrate an absence of significant background contaminants from the tubes prior to the test program.

The proof data for the semi-volatile organics glassware and VOST tubes is provided in Appendix 20. The proof data for the aldehyde solutions is provided in the aldehyde analytical report.

All equipment used in the field testing program was calibrated and checked prior to the field testing program. Pertinent equipment calibration data is supplied in Appendix 21.

As part of ORTECH's internal QA/QC, data acquisition, data reduction and summary procedures were already in place and periodic spot checks of the computer programs were performed using known data sets.

6.3 Emission Testing QA/QC Results

Prior to the field testing program, preliminary data was acquired to perform the required calculations for choosing a nozzle size to permit isokinetic sampling.

The internal diameter of each duct was verified and the appropriate number of sampling points was marked on each sampling probe.

The following general QA/QC criteria were satisfied for each of the test trains where applicable:

- All sampling equipment was cleaned and proven clean (where applicable) prior to the commencement of the field testing program.
- All sampling equipment passed a visual and operational check prior to use in the field.
- Oil filled manometer gauges which had been properly leveled and zeroed were used to measure the velocity pressure.
- All sampling data was recorded in ink on preformatted data sheets at least once every 5 minutes and/or at least twice during sampling each traverse point.
- Any unusual occurrences were noted during each test on the appropriate data form.
- The field team leader reviewed all calibration and sampling data forms daily.
- Only tapered edge sampling nozzles and S-type pitot tubes that had been visually inspected and caliper measured, and deemed acceptable, were used for sampling.
- Each leg of the S-type pitot was leak-checked before the start of testing. The leak-checks were all acceptable (no leak detected).
- Each entire sampling train met acceptable leak-check criteria before and after each test, and during any move from one sampling traverse to another. If a test did not meet the leak-check criteria the test was voided and repeated.
- The S-type pitot tube and sampling nozzle were maintained parallel to the flow during testing and care was taken to ensure that they did not scrape the ports when being inserted and removed from the stack.
- The probe and filter components were maintained at 120°C $\pm$ 14°C during testing. If the probe or filter temperature was outside of the acceptable range the test was halted until the temperature could be brought back into the acceptable range.
- Covanta was responsible for monitoring process operations during testing and notified ORTECH when testing was to proceed.

6.4 Sample Recovery, Handling and Custody

ORTECH's sample identification scheme and system for handling and processing samples was initiated as part of ORTECH's sample tracking system for stack emission samples. All samples were identified by a unique sample number comprised of a series of numbers and letters. A master sample log/chain of custody form was maintained by the QA/QC designate and was made available to the ORTECH personnel designated to perform the sample recovery for a specific sampling train. Once a sample was collected it was labeled and checked against the sample log by the QA/QC designate.

The information contained within the sample number and the sample log enabled the sampling, recovery, data reduction and report writing personnel to easily determine the test date, test number, test type and train sample identification for a given sample. To ensure continuity, the analytical laboratory was requested to use the ORTECH number for sample identification.

The ORTECH personnel responsible for delivering samples used the master sample log/chain of custody form to document the transfer of the samples to the analytical laboratory. Appropriate care was taken when shipping the samples in order to maintain sample integrity. Once the samples and master sample log/chain of custody forms were received by the analytical laboratory, the laboratory personnel verified that all samples had been received and their integrity maintained. The laboratory personnel then signed the master log and made a photocopy which ORTECH personnel received as a record of the chain of custody for the samples.

6.5 Analytical Results

ORTECH uses a one piece condenser and XAD-2 trap for SVOC collection, this component of the test train was Teflon sealed and wrapped with foil prior to being transported to the analytical laboratory where it was given the required five minute soaking with each of acetone and hexane. This is consistent with all SVOC test programs conducted by ORTECH and the modification was documented in the Pre-Test Plan approved by the MECP.

Analyses for the present emission testing program were performed using acceptable laboratory procedures in accordance with the specified analytical protocols. Adherence to the prescribed QA/QC procedures ensured data of consistent and measurable quality. Analytical quality control focused on the use of control standards to provide a measure of analytical accuracy. Replicate analysis (usually duplicate analysis) of the same sample was used as a means of determining precision of the various analytical procedures. Also specific acceptance criteria were defined for various analytical operations including calibrations, control standard analysis, drift checks, blanks, etc.

The following general QA/QC procedures were incorporated into the analytical effort:

- the on-site Field Supervisor reviewed all data and QA/QC data on a daily basis for completeness and acceptability
- master sample logs were maintained for all samples collected
- analytical QA/QC data was tabulated by the analytical laboratories using appropriate charts or forms
- all hard copy raw data was maintained in organized files

Specific analytical QA/QC procedures are presented in the analytical reports and are briefly summarized below.

6.5.1 Metals Sample Analysis QA/QC

The analysis of the Method 29 stack samples involved sample digestion followed by Inductively Coupled Argon Plasma Mass Spectroscopy (ICP-MS) analysis. The analysis for mercury employed cold vapour atomic absorption (CVAA). The analytical QA/QC is described as follows and the results are provided in the analytical report.

ICPMS Analysis

The quality assurance activities conducted by the analytical laboratory are detailed in the Quality Assurance Report provided in the analytical report. Specific QA/QC results are summarized below:

- One duplicate sample analysis was performed for the test program. The relative percent difference was less than 6.4% well within the acceptable limit of less than ±20%, for elements that are greater than 5 times the minimum detection limit.
- A blank spike (performed as a pre-digestion spike) was analyzed with the test samples. All of the recovery results were between 82-105%. The acceptable limit is 80-115% of the true value.
- A matrix spike (performed as a post digestion spike) was analyzed with the test samples. All of the recovery results were between 87-99%. The acceptable limit is 70-130% of the true value.

The following general analytical QA/QC requirements must also be met or the samples are re-analyzed:

- An instrument calibration check standard was analyzed immediately after the calibration curve and must be within 90%-110% of the actual concentrations.
- Instrument calibration blank check sample were analyzed with every 10 samples and must be within three times the minimum detection limit.
- A continuing calibration check is run every 10 samples and must be within 85%-115% of the actual concentrations.
- Instrument (interference) check sample for ICP-MS analysis was analyzed before and after each analytical run. The value(s) found for the interference check sample must be within 80%-120% of the true value.

Barium, chromium, copper, lead, molybdenum and nickel were detected in the blank train at levels greater than the limit of reporting. Chromium, copper, molybdenum and nickel were observed by the analytical laboratory in the method blank at levels greater than the limit of reporting. The test sample data may be biased high for these compounds as a result of this potential background.

Mercury Analysis

The quality assurance activities conducted by the analytical laboratory are detailed in the Quality Assurance Report provided in the analytical report. Specific QA/QC results are summarized below:

- One duplicate sample analysis was performed for each fraction. However, mercury was not detected on any of the fractions in quantities greater than the detection limit.
- A blank spike (performed as a pre-digestion spike) was analyzed with the test samples. All of the recovery results were between 93-96% within the acceptable limit of 90-110% of the true value.
- A matrix spike (performed as a post digestion spike) was analyzed with the test samples. All of the recovery results were between 87-96%, within the acceptable limit of 85-115% of the true value.

The following general analytical QA/QC requirements must also be met or the samples are re-analyzed:

- A 5 point calibration was performed.
- An instrument check calibration standard was analyzed immediately after the calibration and must be within 90%-110% of the actual concentration
- One mid-range calibration standard was analyzed after 10 samples and at the end of the run and must be within 85%-115% of the actual concentration.
- Instrument calibration blank check sample is analyzed with every 10 samples and must be within three times the minimum detection limit.

6.5.2 Acid Gas Sample Analysis QA/QC

Analyses of the acid gas samples from the Method 26A sampling train was performed by Ion Chromatography (IC). The quality assurance activities conducted by the analytical laboratory are detailed in the Quality Assurance Report provided in the analytical report. Specific QA/QC results are summarized below:

- All of the hydrogen chloride and hydrogen fluoride analyses were conducted in duplicate. One duplicate sample analysis was also performed for ammonia. The relative percent difference was less than 3.8%, well within the acceptable limit of less than ±20% for compounds that are greater than 5 times the minimum detection limit.
- A blank spike sample was analyzed with the test samples. The recovery results for the blank spike sample were 97% for hydrogen chloride, 100% for hydrogen fluoride and 103% for ammonia, within the acceptable range of 90-110%.
- A matrix spike (spike confirmation) sample was analyzed with every 20 samples to confirm the identity of each peak. The recovery results of the matrix spike sample were 108% for hydrogen chloride, 96% for hydrogen fluoride and 114% for ammonia, within the acceptable range of 85-115%.

The following general analytical QA/QC requirements must also be met or the samples are re-analyzed:

- A 6 point calibration bracketing the expected range.
- An instrument check calibration standard was analyzed immediately after the calibration and must be within 90%-110% of the actual concentration.
- A complete set of calibration standards were analyzed at the end of the analysis and must be within 10% of the true value.
- One mid-range calibration standard was analyzed after 10 samples and at the end of the run and must be within 90%-110% of the actual concentration.
- Instrument calibration blank check samples were analyzed with every 10 samples and must be within three times the minimum detection limit for each ion.

6.5.3 Aldehyde Sample Analysis QA/QC

Analysis for formaldehyde, acetaldehyde and acrolein was performed via GC/MS. Laboratory control samples were analyzed with the test samples. Two laboratory control samples were prepared by the analytical laboratory and analyzed with the test samples for each Boiler (5µg and 1µg). The recoveries for the 5µg samples were 49% and 17% for acetaldehyde, 71% and 9% for formaldehyde and 29% and 12% for acrolein. The recoveries for the 1µg sample were 89% and 39% for acetaldehyde, 126% and 42% for formaldehyde and 24% and 8% for acrolein. The low recoveries may indicate a low bias in the sample data.

Acrolein was not detected in any of the samples in quantities greater than the reported detection limit. Acetaldehyde and formaldehyde were detected in both blank samples in quantities similar to those found in the test samples. Acetaldehyde and formaldehyde were also detected in the method blank. The test sample data may be biased high for these compounds as a result of this potential background.

6.5.4 SVOC Sample Analysis QA/QC

The combined filter, probe rinse, Amberlite XAD-2 cartridge, impinger solutions and associated rinse and soaking solutions for each of the semi-volatile organics trains were analyzed together as one sample per test.

Staff at ALS added extraction standards to all samples prior to extraction. Clean-up standards were added just prior to the clean-up process. Recoveries of the clean-up standards provide an indication on the losses that occur during the extract clean-up. The analytical report includes the lists of the field spike, extraction and clean-up standards used. The analysis of samples involved complex sample extraction and cleanup, followed by HRMS/MS analysis.

Recovery of the dioxin and furan field spike standards were between 89-134% which indicates good extraction efficiency and provides a high degree of confidence in the results obtained from the dioxin and furan test trains.

Per the analytical report for the Boiler No. 2 chlorobenzenes, very low to nil recoveries were observed for Chlorobenzene-13C6. As a result, chlorobenzene could not be quantified on Test No. 2 and the blank train sample for Boiler No. 2. The chlorobenzene reported for Test No. 1 and Test No. 3 are estimated values.

Per the analytical report for the Boiler No. 1 PAHs, the high field spike recovery of Fluorene-D10 is likely due to an incompletely resolved interference peak.

6.5.5 Volatile Organic Compound Analysis QA/QC

Prior to sampling VOST tube pairs were cleaned and conditioned under helium sweep (approximately 50 mL/min flow) through each tube in an oven at 280°C for at least 12 hours. One VOST pair was analyzed and proven clean for every 10 pairs cleaned. VOST tubes were end-capped and stored sealed in individual screw-capped vials at 4°C between conditioning and shipment to the field.

Two field blanks, a trip blank and a laboratory method blank were analyzed with the test sample tubes. VOST tubes were desorbed and analyzed, combined as pairs, according to SW846 Method 5041A/8260B.

The analytical report includes the field standards, internal standards and surrogate standards used. The surrogate recoveries for each of the surrogates should be between 50-150%. The recoveries for each sample were between 64.8-126.5%.

7. RESULTS AND DISCUSSION

Emission tests were completed for particulate matter, particle size distribution, condensable particulate matter, metals, semi-volatile organic compounds, aldehydes, acid gases and volatile organic compounds at the Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet.

Combustion gases, including hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide were measured during the emission testing program (November 29 to December 2, 2021 for Boiler No. 1, and November 29 to December 2, 2021 and December 9 to December 10, 2021 for Boiler No. 2) by the DYEC CEMS. Total hydrocarbon concentrations were also measured at the BH Outlet and Quench Inlet by ORTECH on November 28 and November 29, 2021.

Tables referenced in this report for the tests conducted at Boiler No. 1 and Boiler No. 2 are provided in Appendix 1 and Appendix 2, respectively.

Detailed test schedules are provided in Table 1 and Table 2 of Appendix 1 and Appendix 2 for Boiler No. 1 and Boiler No. 2, respectively.

7.1 Stack Gas Sampling Parameters

Emission test calculations for the particulate and metals, particle size, acid gases, and SVOC tests conducted are provided in Appendix 22 to Appendix 25, respectively.

Stack gas sampling parameters for the tests conducted at each location are summarized in Table 3 (Appendix 1 and Appendix 2). These parameters include calibration data, nozzle diameter, dry gas volume sampled and average percentage of isokineticity for each test.

7.2 Stack Gas Physical Parameters

Stack gas physical parameters for tests conducted at each BH Outlet location are presented in Table 4 (Appendix 1 and Appendix 2). The average values from the isokinetic tests at each site are summarized below:

Stack Gas Parameter	Boiler No. 1 BH Outlet*	Boiler No. 2 BH Outlet*
Gas Temperature (°C)	141	143
Moisture by Volume (%)	15.5	15.4
Velocity (m/s)	18.5	18.7
Static Pressure (kPa)	-2.81	-2.45
Absolute Pressure (kPa)	97.4	98.3
Carbon Dioxide by Volume (%)**	10.7	10.8
Oxygen by Volume (%)**	8.67	8.89

* Excludes the isokinetic Acid Gases tests as testing was conducted on a single traverse of the duct
** dry basis, measured by DYEC CEMS

7.3 Volumetric Flowrate Data

Stack gas volumetric flowrates for the tests conducted at each BH Outlet location are presented in Table 5 (Appendix 1 and Appendix 2). The average flowrate values from the tests at each site are summarized below:

Volumetric Flowrate	Boiler No. 1 BH Outlet*	Boiler No. 2 BH Outlet*
Actual Flowrate (m^3/s)	27.4	27.6
Dry Reference Flowrate (Rm^3/s)**	16.0	16.3
Dry Adjusted Flowrate (Rm^3/s)***	19.8	19.7
Wet Reference Flowrate (Rm^3/s)**	19.0	19.2

* Excludes the isokinetic Acid Gases tests as testing was conducted on a single traverse of the duct
** at 25°C and 1 atmosphere
*** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

7.4 Particulate Emission Data

Filterable particulate emission data obtained from each of the particulate and metals tests conducted at the BH Outlet of each Boiler is presented in Table 6 (Appendix 1 and Appendix 2). Average filterable particulate emission data for each BH Outlet location is summarized below:

Particulate Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (mg/m^3)	<0.35	<0.22
Dry Reference Conc. (mg/Rm^3)*	<0.59	<0.38
Dry Adjusted Conc. (mg/Rm^3)**	<0.48	<0.31
Wet Reference Conc. (mg/Rm^3)*	<0.50	<0.32
Emission Rate (mg/s)	<9.50	<6.08

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The ECA stipulates maximum in-stack limits for the emissions of various compounds including particulate matter. The average particulate dry adjusted concentration at the Boiler No. 1 BH Outlet (<0.48 mg/Rm^3, adjusted to 11% oxygen) and the Boiler No. 2 BH Outlet (<0.31 mg/Rm^3, adjusted to 11% oxygen) were well below the maximum limit (9 mg/Rm^3, adjusted to 11% oxygen) stated in the ECA.

The amount of particulate matter detected in the blank sampling train filter and acetone probe rinse samples for Boiler No. 1 BH Outlet was 0.6 mg and 0.5 mg, respectively. The amount of particulate detected in the blank sampling train filter and acetone probe rinse samples for Boiler No. 2 BH Outlet was 0.8 mg and <0.1 mg, respectively. Although these levels are significant relative to the amount detected in the test trains, the blank analysis was not subtracted from the test sample analyses during calculation of the particulate emission data.

Particle size distribution tests were also conducted at the BH Outlet of each Boiler. PM_{10} and $PM_{2.5}$ emission data is detailed in Table 7 (Appendix 1 and Appendix 2) for each location. Average emission data for each BH Outlet location is summarized below:

PM_{10} and $PM_{2.5}$ Emission Parameter	PM_{10}		$PM_{2.5}$	
	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (mg/m^3)	<0.26	<0.23	<0.16	<0.15
Dry Reference Conc. (mg/Rm^3)*	<0.44	<0.39	<0.27	<0.25
Dry Adjusted Conc. (mg/Rm^3)**	<0.35	<0.32	<0.22	<0.21
Wet Reference Conc. (mg/Rm^3)*	<0.37	<0.33	<0.23	<0.21
Emission Rate (mg/s)	<7.20	<6.45	<4.49	<4.13

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Condensable particulate emission data obtained from the back-half of each of the particle size distribution tests conducted at the BH Outlet for each Boiler is presented in Table 8 (Appendix 1 and Appendix 2). Average condensable particulate emission data for each BH Outlet location is summarized below:

Condensable Particulate Emission Parameter	Inorganic Fraction		Organic Fraction	
	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (mg/m^3)	1.44	1.54	1.15	1.72
Dry Reference Conc. (mg/Rm^3)*	2.47	2.64	1.98	2.94
Dry Adjusted Conc. (mg/Rm^3)**	1.99	2.19	1.60	2.44
Wet Reference Conc. (mg/Rm^3)*	2.08	2.23	1.67	2.48
Emission Rate (mg/s)	40.6	43.5	32.5	48.3

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The amount of condensable particulate detected in the blank sampling train for Boiler No. 1 was 1.1 mg for the inorganic fraction and 0.5 mg for the organic fraction. The amount of condensable particulate detected in the blank sampling train for Boiler No. 2 was 0.5 mg for the inorganic fraction and 0.5 mg for the organic fraction. Although these levels are significant relative to the amount detected in the test trains, the blank analysis was not subtracted from the test sample analyses during calculation of the condensable particulate emission data.

The average PM_{10} and $PM_{2.5}$ results, including condensable particulate matter, are summarized below for each Boiler:

PM_{10} and $PM_{2.5}$ + Condensable Emission Parameter	PM_{10} + Condensable		$PM_{2.5}$ + Condensable	
	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (mg/m^3)	<2.85	<3.49	<2.75	<3.40
Dry Reference Conc. (mg/Rm^3)*	<4.89	<5.97	<4.72	<5.83
Dry Adjusted Conc. (mg/Rm^3)**	<3.94	<4.95	<3.81	<4.84
Wet Reference Conc. (mg/Rm^3)*	<4.12	<5.04	<3.98	<4.92
Emission Rate (mg/s)	<80.4	<98.3	<77.6	<96.0

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

7.5 Acid Gases

Hydrogen chloride, hydrogen fluoride and ammonia emission data for the tests conducted at the BH Outlet of each Boiler are presented in Table 9 (Appendix 1 and Appendix 2). Hydrogen fluoride was not detected in any of the test samples in quantities greater than the detection limit. The detection limit was used to calculate hydrogen fluoride emission data. Hydrogen chloride and ammonia were detected in quantities greater than the detection limit in all of the samples collected at each location.

Average hydrogen chloride, hydrogen fluoride and ammonia emission data for the tests conducted at the BH Outlet of each Boiler is summarized below:

Acid Gases	Hydrogen Chloride		Hydrogen Fluoride		Ammonia	
Emission Parameter	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
Actual Conc. (mg/m^3)	2.93	2.98	<0.074	<0.077	0.38	0.63
Dry Reference Conc. (mg/Rm^3)*	4.92	5.04	<0.12	<0.13	0.64	1.07
Dry Adjusted Conc. (mg/Rm^3)**	4.03	4.17	<0.10	<0.11	0.53	0.89
Wet Reference Conc. (mg/Rm^3)*	4.21	4.27	<0.11	<0.11	0.55	0.91
Emission Rate (mg/s)	78.0	80.9	<1.97	<2.08	10.2	17.2
Dry Adjusted Conc. (ppm)**	2.71	2.80	<0.12	<0.13	0.76	1.28

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Hydrogen chloride, hydrogen fluoride and ammonia were not detected in the blank samples in quantities greater than the detection limit. The blank analysis was not subtracted from the test sample analyses during calculation of the emission data.

7.6 Combustion Gas Emission Data

Combustion gases, including carbon dioxide, carbon monoxide, hydrogen chloride, nitrogen oxides, oxygen and sulphur dioxide, were measured continuously at the BH Outlet during the emission testing program by the DYEC CEMs. Oxygen was also measured at the Quench Inlet by the DYEC CEMS. The oxygen, carbon dioxide and carbon monoxide concentrations for each test period were used to calculate the molecular weight of the gas stream. The oxygen concentration data was also used to correct the dry reference concentration data to 11% oxygen.

DYEC provided 1-hour average concentrations for each clock hour using the 1-minute combustion gas data measured by the DYEC CEMs during each isokinetic test day at each Boiler. DYEC CEMS data was provided from November 29 to December 2, 2021 for Boiler No. 1, and November 29 to December 2, 2021 and December 9 to December 10, 2021 for Boiler No. 2.

A 24-hour rolling average was determined for hydrogen chloride, nitrogen oxides and sulphur dioxide using the 1-hour average data for the isokinetic test days at each unit to compare to the in-stack limits stated in the ECA. A 4-hour rolling average was determined for carbon monoxide using the calculated 1-hour average data for the isokinetic test days at each unit to compare to the in-stack limit stated in the ECA.

The minimum, average and maximum 1-hour, 4-hour and 24-hour combustion gas data measured by the DYEC CEMS is summarized in Table 10 (Appendix 1 and Appendix 2). The maximum concentration, along with the in-stack limit stated in the ECA, is summarized in the following table for each component.

Combustion Gases Emission Parameter		In-Stack ECA Limit	Maximum Concentration	
			Boiler No. 1	Boiler No. 2
BH Outlet	Oxygen (%, 1-hr)	-	9.78	10.05
	Carbon Monoxide (mg/Rm^3, 4-hr)*	≤ 40	17.5	23.0
	Sulphur Dioxide (mg/Rm^3, 24-hr)*	≤ 35	0.6	0.8
	Nitrogen Oxides (mg/Rm^3, 24-hr)*	≤ 121	112	111
	Hydrogen Chloride (mg/Rm^3, 24-hr)*	≤ 9	2.5	3.1
	Total Hydrocarbons (mg/Rm^3, 1-hr)*	-	0	1
Quench Inlet	Oxygen (%, 1-hr)	≥ 6	10	10

* dry at reference conditions, adjusted to 11% oxygen
** dry at reference conditions

Total hydrocarbon concentration data was measured by ORTECH on November 28 and November 29, 2021 at the Quench Inlet and BH Outlet sampling locations. The results of the total hydrocarbons tests are summarized in Table 10 (Appendix 1 and Appendix 2). The average THC concentration for each location, along with the in-stack limit stated in the ECA, is summarized in the following table.

Combustion Gases Emission Parameter		Limit	Average Concentration	
			Boiler No. 1	Boiler No. 2
BH Outlet	Total Hydrocarbons (1-minute)*	-	0.1	0.2
	Total Hydrocarbons (10-minute)**	-	0.1	0.2
Quench Inlet	Total Hydrocarbons (1-minute)*	-	0	0
	Total Hydrocarbons (10-minute)**	50	0	0

* ppm dry basis, expressed as equivalent methane (average of each 60 minute test with data recorded in 1-minute intervals)
** ppm dry basis, expressed as equivalent methane (average of each 60 minute test calculated using the 10-minute rolling average)

The one-minute average total hydrocarbon data and the 10-minute total hydrocarbon data measured by ORTECH and expressed on a dry basis as equivalent methane is provided in Appendix 26.

7.7 Metal Emission Data

Metal analytical results for the tests performed at the BH Outlet of each Boiler are given in Tables 11, 12 and 13 (Appendix 1 and Appendix 2) for Test No. 1, Test No. 2 and Test No. 3, respectively. Metal concentrations and emission rates are shown in Tables 14, 15 and 16 for Test No. 1, Test No. 2 and Test No. 3, respectively.

Summaries of the metal actual concentrations, dry reference concentrations, dry adjusted concentrations, wet reference concentrations, and emission rates including the coefficients of variation for the tests performed are provided in Tables 17, 18, 19, 20 and 21, respectively. Table 22 summarizes the average metal emission data for the tests performed.

Table 23 summarizes the results from the blank metals trains. The amount of metals detected in the blank trains was significant when compared to the amounts collected in the test trains since most of the metals in the test trains were at or near the detection limit. The emission data was not corrected for the blank data.

The metals analysis of the Method 29 test trains was performed on two separate analytical fractions, the probe and filter hydrofluoric acid digest and analysis of the train impingers and associated rinses. In instances where all analyses were reported to be below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, and the remaining fraction was assigned a value of zero. In instances where any given fraction was detected that value was used to calculate emission data, and the remaining undetected fraction were assigned a value of zero.

The ECA stipulates maximum in-stack limits for the emissions of various compounds including cadmium and lead.

The average cadmium emission data is summarized below:

Cadmium Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (µg/m^3)	0.045	<0.016
Dry Reference Conc. (µg/Rm^3)*	0.077	<0.027
Dry Adjusted Conc. (µg/Rm^3)**	0.064	<0.022
Wet Reference Conc. (µg/Rm^3)*	0.066	<0.022
Emission Rate (mg/s)	0.0013	<0.00042

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The average lead emission data is summarized below:

Lead Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (µg/m^3)	0.33	0.13
Dry Reference Conc. (µg/Rm^3)*	0.56	0.21
Dry Adjusted Conc. (µg/Rm^3)**	0.46	0.17
Wet Reference Conc. (µg/Rm^3)*	0.48	0.18
Emission Rate (mg/s)	0.0089	0.0034

* at 25°C and 1 atmosphere
** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The cadmium and lead dry adjusted concentrations were well below the maximum in-stack emission limits stated in the ECA (7 µg/Rm^3, adjusted to 11% oxygen for cadmium and 50 µg/Rm^3, adjusted to 11% oxygen for lead).

7.8 Mercury Emission Data

Mercury analysis, concentration and emission data are also summarized in the metals emission tables. Mercury was not detected in quantities greater than the method detection limit in the three tests at Boiler No. 1 and Boiler No. 2, and as is the case with all other analyses the mercury analytical results are not blank corrected.

The average mercury emission data is summarized below:

Mercury Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (µg/m^3)	<0.038	<0.038
Dry Reference Conc. (µg/Rm^3)*	<0.065	<0.065
Dry Adjusted Conc. (µg/Rm^3)**	<0.053	<0.053
Wet Reference Conc. (µg/Rm^3)*	<0.055	<0.055
Emission Rate (mg/s)	<0.0010	<0.0010

* at 25°C and 1 atmosphere
** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The mercury dry adjusted concentrations were well below the maximum in-stack emission limit stated in the ECA of 15 µg/Rm^3, adjusted to 11% oxygen.

7.9 Semi-Volatile Organic Emission Data

The combined filter and probe rinse, and combined Amberlite XAD-2 cartridge and impinger solutions for each of the semi-volatile organics trains were analyzed together (one analysis per test) for semi-volatile organic compounds including select dioxins, furans, dioxin-like polychlorinated biphenyls (PCBs), chlorobenzenes (CBs), chlorophenols (CPs) and polycyclic aromatic hydrocarbons (PAHs) at the BH Outlet of each Boiler.

7.9.1 Dioxins and Furans Emission Data

Dioxins and furans are groups of chemically related chlorinated organic compounds or congeners. There are seventy-five dioxin congeners and one hundred and thirty five furan congeners. The individual congeners all have different molecular structures and they may also have different molecular formulae. Individual congeners, which have the same molecular formula but different molecular structure, are referred to as isomers. Groups of isomers are referred to as congener groups or homologues. The basic dioxin and furan molecules have the molecular formulae $C_{12}H_8O_2$ and $C_{12}H_8O$, respectively. In chlorinated dioxin and furans, between one and eight chlorine atoms may replace an equal number of hydrogen atoms in the basic molecule.

The following table lists the chlorinated dioxin and furan congener groups, and the number of isomers present in each group:

Congener Group Abbreviation		Number of Chlorine Atoms Per Molecule	Molecular Formula	Number of Isomers Per Congener Group
Dioxins	M1CDD	1	$C_{12}H_7ClO_2$	2
	D2CDD	2	$C_{12}H_6Cl_2O_2$	10
	T3CDD	3	$C_{12}H_5Cl_3O_2$	14
	T4CDD	4	$C_{12}H_4Cl_4O_2$	22
	P5CDD	5	$C_{12}H_3Cl_5O_2$	14
	H6CDD	6	$C_{12}H_2Cl_6O_2$	10
	H7CDD	7	$C_{12}H_1Cl_7O_2$	2
	O8CDD	8	$C_{12}Cl_8O_2$	1
Furans	M1CDF	1	$C_{12}H_7ClO$	4
	D2CDF	2	$C_{12}H_6Cl_2O$	16
	T3CDF	3	$C_{12}H_5Cl_3O$	28
	T4CDF	4	$C_{12}H_4Cl_4O$	38
	P5CDF	5	$C_{12}H_3Cl_5O$	28
	H6CDF	6	$C_{12}H_2Cl_6O$	16
	H7CDF	7	$C_{12}H_1Cl_7O$	4
	O8CDF	8	$C_{12}Cl_8O$	1

In Ontario, the MECP normally requires that only the higher tetra to octa (T4CDD to O8CDD) dioxin congeners and the higher tetra to octa (T4CDF to O8CDF) furan congeners are included in air emission testing. This is because the lower mono to tri congener groups (M1CDD to T3CDD and M1CDF to T3CDF) are considered to be generally less toxic than the higher congener groups and the test procedures have not been validated for these lower groups. In addition, it is acceptable to the MECP to use only specific isomers in the higher congener groups to compare emission data with the MECP criteria for dioxin and furan emissions.

Dioxin and furan congener group analytical results and emission data for the tests performed at the BH Outlet of each Boiler are given in Table 24 to Table 32 (Appendix 1 and Appendix 2). The results are shown as congener groups from T4CDF to O8CDF and T4CDD to O8CDD, as normally required by the MECP.

The average dioxin congener group emission data for each location is summarized below:

Dioxin Congener Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (ng/m^3)	1.33	0.097
Dry Reference Conc. (ng/Rm^3)*	2.29	0.16
Dry Adjusted Conc. (ng/Rm^3)**	1.82	0.13
Wet Reference Conc. (ng/Rm^3)*	1.92	0.14
Emission Rate (ng/s)	35.3	2.68

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The average furan congener group emission data for each location is summarized below:

Furan Congener Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (ng/m^3)	0.23	<0.031
Dry Reference Conc. (ng/Rm^3)*	0.39	<0.053
Dry Adjusted Conc. (ng/Rm^3)**	0.31	<0.043
Wet Reference Conc. (ng/Rm^3)*	0.33	<0.045
Emission Rate (ng/s)	6.10	<0.87

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The amounts of dioxin and furan congeners detected in the blank sampling trains and in the laboratory blank were insignificant when compared to the amounts detected in the test trains. The blank sampling train analytical results are shown in Table 33. The blank analyses were not subtracted from the test sample analyses during calculation of the dioxin and furan congener emission data.

Dioxin, furan and dioxin-like PCB specific isomer analytical results and emission data for the tests performed are given in Table 34 to Table 42 (Appendix 1 and 2) for the BH Outlets. The isomers included in these tables are considered the most toxic of all the dioxin and furan isomers. They are characterized by having chlorine atoms located at the 2, 3, 7 and 8 positions of the basic dioxin and furan molecules.

The blank sampling train analytical results are shown in Table 43 for the BH Outlet. The blank analyses were not subtracted from the test sample analyses during the calculation of the dioxin and furan isomer emission data.

Several schemes have been proposed for calculating dioxin and furan toxic equivalents (TEQ's) in which different factors have been assigned to the various isomers and congener groups. Calculations in this report are based on the methods preferred by the MECP, which use WHO and NATO/CCMS (1989) toxicity equivalence factors (TEFs).

The purpose in calculating dioxin and furan emission rates as toxic equivalents is to provide a means of assessing and comparing the effects of dioxin and furan emission rates for different emission sources. In these calculations, 2,3,7,8-T4CDD, the most toxic of all the dioxin and furan isomers, is assigned an arbitrary value of 1.0 for a toxic equivalency factor.

Then, other dioxin and furan isomers are assigned toxic equivalency factors which are based on their relative toxicity compared with 2,3,7,8-T4CDD. Emission rates for each isomer are multiplied by their assigned factor and the products are summed to provide the toxic equivalency emission rate.

The MECP "Summary of Standards and Guidelines to Support Ontario Regulation 419/05 – Air Pollution – Local Air Quality", dated April 2012, provided a new framework for calculating dioxin and furan toxicity equivalent concentrations which includes emission data for 12 dioxin-like PCBs. This document was replaced by "Air Contaminants Benchmarks List: standards, guidelines and screening levels for assessing point of impingement concentrations of air contaminants", with the most recent version published on April 27, 2018, however the dioxin and furan toxicity equivalent calculation methodology remains the same.

Tables 44 to 49 show the dioxins, furans and dioxin-like PCBs toxicity equivalent emission data calculated using the full detection limit for those compounds not detected. Table 50 show the dioxins, furans and dioxin-like PCBs toxicity equivalent emission data calculated using half the detection limit for those compounds not detected.

The average dioxin, furan and dioxin-like PCBs toxicity equivalent emission data, calculated using the WHO toxicity equivalence factors and half the detection limit (Table 50 in Appendix 1 and Appendix 2) is summarized below. Per the MECP standards and guidelines referenced above, dioxin, furan and dioxin-like PCB toxicity equivalent emission data calculated using the WHO toxicity equivalence factors and half the detection limit are used for dispersion modelling analysis for comparison with the point of impingement criteria discussed in Section 8.

Total Dioxin and Furan Isomer and PBCs Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (pg TEQ/m^3)	9.79	1.60
Dry Reference Conc. (pg TEQ/Rm^3)*	16.8	2.71
Dry Adjusted Conc. (pg TEQ/Rm^3)**	13.4	2.22
Wet Reference Conc. (pg TEQ/Rm^3)*	14.2	2.29
Emission Rate (ng TEQ/s)	0.26	0.044

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The average dioxin and furan dry adjusted toxicity equivalent concentration, calculated using the NATO/CCMS (1989) toxicity equivalence factors and the full detection limit (Table 46B in Appendix 1 and Appendix 2) is summarized below. Dioxin and furan toxicity equivalent emission data for the BH Outlet, calculated using the NATO/CCMS (1989) toxicity equivalence factors and the full detection limit, is used for comparison with the in-stack emission limit specified in the ECA.

Dioxin and Furan Isomer Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Dry Adjusted Conc. (pg TEQ/Rm^3)*	<14.7	<2.56

* at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The dioxin and furan dry adjusted TEQ concentration at the BH Outlet of each Boiler was well below the maximum in-stack emission limit stated in the ECA of 60 pgTEQ/Rm^3, adjusted to 11% oxygen.

7.9.2 Chlorobenzene and Chlorophenol Emission Data

As with dioxins and furans, chlorobenzenes and chlorophenols are groups of compounds that have different molecular structures and may also have different numbers of chlorine atoms in the basic molecule. Chlorobenzenes have the structure of the benzene molecule except that between one and six chlorine atoms are substituted for an equal number of hydrogen atoms in the benzene ring. Benzene has the molecular formula C_6H_6. Chlorobenzene congener groups have the molecular formulae C_6H_5Cl, $C_6H_4Cl_2$, $C_6H_3Cl_3$, $C_6H_2Cl_4$, C_6HCl_5 and C_6Cl_6. Chlorophenols have the structure of the phenol molecule except that between one and five chlorine atoms are substituted for an equal number of hydrogen atoms in the benzene ring. Phenol has the molecular formula C_6H_5OH. Chlorophenol congener groups have the molecular formulae C_6H_4ClOH, $C_6H_3Cl_2OH$, $C_6H_2Cl_3OH$, C_6HCl_4OH and C_6Cl_5OH.

Chlorobenzene congener and isomer analytical results and emission data are given in Table 51 to Table 59 for the BH Outlet.

Amounts collected were assumed to be equivalent to the detection limit, where the analytical results were below the detection limit.

The average total chlorobenzene emission data is presented below:

Chlorobenzenes Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (ng/m^3)	<157	<70.8
Dry Reference Conc. (ng/Rm^3)*	<269	<120
Dry Adjusted Conc. (ng/Rm^3)**	<214	<98.1
Wet Reference Conc. (ng/Rm^3)*	<227	<101
Emission Rate (µg/s)	<4.13	<1.95

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Blank sampling train and laboratory blank analytical results for chlorobenzenes are given in Table 60. The blank analyses were not subtracted from the test sample analyses during the calculation of chlorobenzene emission data.

Chlorophenol congener and isomer analytical results and emission data is given in Table 61 to Table 69 for the BH Outlet of each Boiler.

Amounts collected were assumed to be equivalent to the detection limit, where the analytical results were below the detection limits (<DL). Note the detection limit for Boiler No. 1 (120 ng) was double the detection limit for Boiler No. 2 (60 ng).

The average total chlorophenol emission data is presented below:

Chlorophenol Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (ng/m^3)	<251	<120
Dry Reference Conc. (ng/Rm^3)*	<431	<202
Dry Adjusted Conc. (ng/Rm^3)**	<343	<166
Wet Reference Conc. (ng/Rm^3)*	<362	<171
Emission Rate (µg/s)	<6.64	<3.30

* at 25°C and 1 atmosphere
** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Blank sampling train and laboratory blank analytical results for chlorophenols are given in Table 70. The blank analyses were not subtracted from the test sample analyses during the calculation of chlorophenol emission data.

7.9.3 Polycyclic Aromatic Hydrocarbon Emission Data

The SVOC samples from the BH Outlet sampling location on each Boiler were also analyzed for select polycyclic aromatic hydrocarbon (PAH) compounds.

Analytical results and PAH emission data for the tests performed are provided in Table 71, 72 and Table 73 for Test No. 1, Test No. 2 and Test No. 3, respectively. PAH actual concentrations, dry reference concentrations, dry adjusted concentrations, wet reference concentrations, and emission rates are shown in Tables 74 to 78, respectively. A summary of the average emission data is given in Table 79.

The average total PAH emission data is presented below:

Total PAH Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (ng/m^3)	<429	<145
Dry Reference Conc. (ng/Rm^3)*	<736	<245
Dry Adjusted Conc. (ng/Rm^3)**	<585	<201
Wet Reference Conc. (ng/Rm^3)*	<619	<207
Emission Rate (µg/s)	<11.3	<3.99

* at 25°C and 1 atmosphere
** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Table 80 summarizes the lab blank and blank train PAH analyses. The blank train sample analyses were not subtracted from the test train sample analyses for the purposes of emission rate calculations.

7.10 Aldehydes

Acetaldehyde, formaldehyde and acrolein emission data for the tests conducted at the BH Outlet of each Boiler is presented in Table 81.

Average acetaldehyde, formaldehyde and acrolein emission data for the tests conducted at the BH Outlet of each Boiler is summarized below:

Aldehydes Emission Parameter	Acetaldehyde		Formaldehyde		Acrolein	
	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (µg/m^3)	50.8	21.9	18.7	5.01	<1.83	<1.57
Dry Reference Conc. (µg/Rm^3)*	87.1	36.9	32.0	8.42	<3.13	<2.63
Dry Adjusted Conc. (µg/Rm^3)**	69.7	30.3	25.6	6.92	<2.50	<2.16
Wet Reference Conc. (µg/Rm^3)*	73.2	31.3	26.9	7.15	<2.63	<2.23
Emission Rate (mg/s)	1.34	0.60	0.49	0.14	<0.048	<0.043

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Acrolein was not detected in any of the test samples or in the blank samples in quantities greater than the reported detection limit. Acetaldehyde and formaldehyde were detected in both blank samples in quantities greater than the detection limit and in quantities similar to the test samples.

7.11 Volatile Organic Emission Data

Three forty minute test runs were completed at each BH Outlet for volatile organic compounds using SLO-VOST. One backup pair of tubes was collected for each Boiler and archived in case a sample was lost during the analytical extraction process.

Volatile organic analysis data for the tests is provided in Table 82, 83 and Table 84 for Test No. 1, Test No. 2 and Test No. 3, respectively. Test No. 4 for both Units was archived. The average test results of volatile organic actual concentrations, dry reference concentrations, dry adjusted concentrations, wet reference concentrations, and emission rates are shown in Table 85 to 89, respectively. The average volatile organic emission data is summarized in Table 90.

The average total VOC emission data collected from the VOST sampling train is presented below:

VOC Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (µg/m^3)	<65.2	<33.4
Dry Reference Conc. (µg/Rm^3)*	<110	<56.2
Dry Adjusted Conc. (µg/Rm^3)**	<88.6	<46.5
Wet Reference Conc. (µg/Rm^3)*	<93.0	<47.6
Emission Rate (mg/s)	<1.66	<0.91

* at 25°C and 1 atmosphere
** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The average total VOC emission data, including acetaldehyde, formaldehyde and acrolein, per the list provided in Schedule D of the ECA is presented below:

VOC Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Dry Reference Conc. (µg/Rm^3)*	<232	<104
Dry Adjusted Conc. (µg/Rm^3)**	<186	<85.9
Emission Rate (mg/s)	<3.54	<1.69

* at 25°C and 1 atmosphere
** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Analysis of blank adsorbent tubes is provided in Table 91. The field blank tubes were taken to the test site and uncapped in order to expose the tubes to the ambient environment at the sampling location. Test sample analyses were not blank corrected during the calculation of the emission data.

8. DISPERSION MODELLING

The emission data measured during the testing program was used to assess emissions from the main stack against the point of impingement criteria detailed in Ontario Regulation 419/05 or the applicable MECP guideline.

Dispersion modelling was completed using the CALPUFF model (using Version 7.2.1 level 141010 as approved by the MECP in December 2021) by Golder Associates. The dispersion modelling results are detailed in Appendix 27. Golder Associates can provide the dispersion modelling zip files upon request.

The predicted ground level Point of Impingement (POI) concentrations, calculated based on the average total emission rate, for each contaminant included in the November/December 2021 emission testing program was well below the applicable standard, guideline or upper risk threshold. The contaminant with the highest predicted concentration relative to the standard was nitrogen oxides (11% of the 1-hour standard and 2% of the 24-hour standard with meteorological anomaly removal), all other contaminants were 1% or less than the relevant standard with meteorological anomaly removal.

9. FACILITY PROCESS DATA

Continuous Emission Monitoring (CEM) data was supplied by DYEC personnel for the emission test program. The 1-hour CEM System data was provided for the following process parameters at the BH Outlet sampling locations:

- Hydrogen Chloride (mg/Rm^3, adjusted to 11% oxygen)
- Nitrogen Oxides (mg/Rm^3, adjusted to 11% oxygen)
- Sulphur Dioxide (mg/Rm^3, adjusted to 11% oxygen)
- Carbon Monoxide (mg/Rm^3, adjusted to 11% oxygen)
- Oxygen (% volume, dry)
- Total Hydrocarbons (mg/Rm^3, adjusted to 11% oxygen)

DYEC provided 1-hour average concentrations for each clock hour using the 1-minute combustion gas data measured by the DYEC CEMs during each isokinetic test day at each Boiler. DYEC CEMS data was provided from November 29 to December 2, 2021 for Boiler No. 1, and November 29 to December 2, 2021 and December 9 to December 10, 2021 for Boiler No. 2. A 24-hour rolling average was determined for hydrogen chloride, nitrogen oxides and sulphur dioxide using the 1-hour average data for the isokinetic test days at each unit to compare to the in-stack limits stated in the ECA. A 4-hour rolling average was determined for carbon monoxide using the calculated 1-hour average data for the isokinetic test days at each unit to compare to the in-stack limit stated in the ECA.

The combustion gas concentrations, expressed as 1-hour average concentrations, 4-hour rolling average and 24-hour rolling average where applicable, at the Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet are provided in Appendix 28.

1-minute CEM data provided by DYEC was used to calculate the average oxygen, carbon dioxide and carbon monoxide concentrations for each isokinetic test period. The average oxygen, carbon dioxide and carbon monoxide concentrations were used to calculate the molecular weight of the gas stream. The average oxygen concentrations were also used to adjust the dry reference concentration data to 11% oxygen. The 1-minute data for the isokinetic test periods has been retained by ORTECH and can be provided upon request.

ORTECH a Kontrol Technologies Company

The facility process data was also supplied by DYEC personnel for each test day. Hourly process data has been retained by Covanta and can be provided upon request. The process data is summarized below:

Test Date	Total Power Output* (MWh/d)	Aux. Fuel Combusted** (m^3/d)		Avg. Combustion Zone Temp. (°C)		Steam (tonnes/d)		MSW Combusted*** (tonnes/d)		NO_X Reagent Inj. Rate (liters/d)		Carbon Inj. Rate (kg/d)		Lime Inj. Rate (kg/d)	
		Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
Nov 29, 2021	386	0	0	1262	1321	804	796	190	194	1069	595	126	127	4235	4227
Nov 30, 2021	331	0	4989	1245	1310	800	679	202	160	1026	885	126	126	4166	4173
Dec 1, 2021	381	0	0	1230	1312	802	790	216	184	914	646	126	126	4228	4194
Dec 2, 2021	387	0	0	1246	1299	803	794	216	184	971	664	126	127	4070	4020
Dec 9, 2021	382		0		1304		802		173		805		127		4210
Dec 10, 2021	388		0		1322		791		208		662		126		4190
Average	376 (371)	0	832	1246	1311	802	775	206	184	995	709	126	127	4175	4169

* Gross turbine output (value in brackets represents the average of the tests conducted on Boiler No. 1)

** Auxiliary fuel was not combusted during the conduct of reference test runs to demonstrate ECA compliance

*** Calculated by crane scales.

10. CONCLUSIONS

The main conclusions which can be drawn from the present emission testing program are:

- The facility was maintained within the operational parameters defined by the amended ECA that constitutes normal operation during the stack test periods. Testing was conducted at a steam production rate of greater than 790 tonnes of steam per day for each Boiler (approximately 97.8% of maximum continuous rating). The maximum continuous rating for the facility is 1614.7 tonnes of steam per day for the two Boilers combined (33.64 tonnes of steam per hour or 807.4 tonnes per day for each Boiler). Note the November 30, 2021 steam production rate for Boiler No. 2 (679 tonnes of steam per day) was excluded as the process was down for a period of time due to a crane malfunction.
- The in-stack concentrations of the components listed in the ECA were all below the concentration limits provided in the ECA.
- Using CALPUFF dispersion modelling techniques (using Version 7.2.1 level 141010 as approved by the MECP in December 2021), the predicted maximum point of impingement concentrations, based on the average test results for both boilers, show DYEC to be operating well below the current standards in Regulation 419/05 (Schedule 3) under the Ontario Environmental Protection Act and other MECP criteria including guidelines and upper risk thresholds.

Schedule C of ECA No. 7306-8FDKNX lists in-stack limits for the emissions of various compounds. Emissions limits are given for particulate matter, mercury, cadmium, lead, dioxins and furans and organic matter as the results from compliance source testing. Emission limits are also given for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide calculated as the rolling arithmetic average of data measured by a CEMS.

Since relative accuracy and system bias testing was conducted in June 2021, the data recorded by the DYEC CEMS was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide. Note the DYEC CEMS data for the days when isokinetic testing was performed at each unit (November 29 to December 2, 2021 for Boiler No. 1, and November 29 to December 2, 2021 and December 9 to December 10, 2021 for Boiler No. 2) was used to determine the minimum, average and maximum concentrations of the combustion gases listed in the ECA.

Total hydrocarbon concentration data was measured by ORTECH on November 28 and November 29, 2021 at the Quench Inlet and BH Outlet sampling locations. The total hydrocarbon data measured by ORTECH at the Quench Inlet sample locations was well below the total hydrocarbons (organic matter) in-stack emissions limit detailed in Schedule C of the ECA.

The average results for the tests conducted at Boiler No. 1, along with the respective in-stack emission limits, are summarized in the following table:

Parameter	Test No. 1	Test No. 2	Test No. 3	Average	In-Stack Limit
Total Power Output (MWh/day)*	-	-	-	371	-
Average Combustion Zone Temp. (°C)*	-	-	-	1246	-
Steam (tonnes/day)*	-	-	-	802	-
MSW Combusted (tonnes/day)*	-	-	-	206	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	995	-
Carbon Injection (kg/day)*	-	-	-	126	-
Lime Injection (kg/day)*	-	-	-	4175	-
Filterable Particulate (mg/Rm^3) (1)	0.30	0.78	<0.38	<0.48	9
PM_{10} with Condensable (mg/Rm^3) (1)	<3.34	<4.49	<3.99	<3.94	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<3.21	<4.29	<3.93	<3.81	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.10	<0.10	<0.10	<0.10	-
Ammonia (mg/Rm^3) (1)	0.52	0.53	0.53	0.53	-
Cadmium (µg/Rm^3) (1)	0.043	0.043	0.11	0.064	7
Lead (µg/Rm^3) (1)	0.65	0.50	0.22	0.46	50
Mercury (µg/Rm^3) (1)	<0.054	<0.054	<0.052	<0.053	15
Antimony (µg/Rm^3) (1)	0.56	0.74	0.048	0.45	-
Arsenic (µg/Rm^3) (1)	0.25	<0.043	0.050	<0.11	-
Barium (µg/Rm^3) (1)	1.82	1.53	1.53	1.63	-
Beryllium (µg/Rm^3) (1)	<0.043	<0.043	0.14	<0.076	-
Chromium (µg/Rm^3) (1)	0.91	0.82	0.71	0.81	-
Cobalt (µg/Rm^3) (1)	0.032	0.026	0.13	0.063	-
Copper (µg/Rm^3) (1)	2.46	2.06	1.88	2.13	-
Molybdenum (µg/Rm^3) (1)	6.96	6.76	6.56	6.76	-
Nickel (µg/Rm^3) (1)	0.66	0.78	0.62	0.69	-
Selenium (µg/Rm^3) (1)	<0.22	<0.22	<0.21	<0.21	-
Silver (µg/Rm^3) (1)	<0.043	<0.043	<0.042	<0.043	-
Thallium (µg/Rm^3) (1)	<0.043	<0.043	0.19	<0.091	-
Vanadium (µg/Rm^3) (1)	<0.022	0.12	0.16	<0.098	-
Zinc (µg/Rm^3) (1)	4.59	5.72	4.75	5.02	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<13.0	<18.1	<12.9	<14.7	60
Total Chlorobenzenes (ng/Rm^3) (1)	<242	<128	<272	<214	-
Total Chlorophenols (ng/Rm^3) (1)	<347	<333	<349	<343	-
Total PAHs (ng/Rm^3) (1)	<642	<356	<756	<585	-
VOCs (µg/Rm^3) (1)	<114	<65.0	<86.4	<88.6	-
Aldehydes (µg/Rm^3) (1)	<95.8	<92.3	<105	<97.8	-
Total VOCs (µg/Rm^3) (1) (4)	<210	<157	<191	<186	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	0	0	0	0	50

* based on process data provided by Covanta

(1) dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

(2) dry basis as equivalent methane (average of each 60 minute test with data recorded in 1-minute intervals)

(3) calculated using the NATO/CCMS (1989) toxicity equivalence factors and the full detection limit for those isomers below the analytical detection limit, dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

(4) Includes all components from the volatile organic compounds test list in the ECA (i.e. Volatile Organic Sampling Train and Aldehyde Sampling train components).

The average results for the tests conducted at Boiler No. 2, along with the respective in-stack emission limits, are summarized in the following table:

Parameter	Test No. 1	Test No. 2	Test No. 3	Average	In-Stack Limit
Total Power Output (MWh/day)*	-	-	-	376	-
Average Combustion Zone Temp. (°C)*	-	-	-	1311	-
Steam (tonnes/day)*	-	-	-	775	-
MSW Combusted (tonnes/day)*	-	-	-	184	-
NO_X Reagent Injection Rate (liters/day)*	-	-	-	709	-
Carbon Injection (kg/day)*	-	-	-	127	-
Lime Injection (kg/day)*	-	-	-	4169	-
Filterable Particulate (mg/Rm^3) (1)	0.28	<0.40	0.26	<0.31	9
PM_{10} with Condensable (mg/Rm^3) (1)	<3.69	<4.46	<6.70	<4.95	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<3.62	<4.25	<6.64	<4.84	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.10	<0.11	<0.11	<0.11	-
Ammonia (mg/Rm^3) (1)	0.36	0.55	1.76	0.89	-
Cadmium (µg/Rm^3) (1)	0.030	<0.021	0.014	<0.022	7
Lead (µg/Rm^3) (1)	0.26	0.15	0.11	0.17	50
Mercury (µg/Rm^3) (1)	<0.053	<0.052	<0.054	<0.053	15
Antimony (µg/Rm^3) (1)	0.40	<0.042	<0.044	<0.16	-
Arsenic (µg/Rm^3) (1)	<0.042	<0.042	<0.044	<0.043	-
Barium (µg/Rm^3) (1)	1.31	1.39	0.15	0.95	-
Beryllium (µg/Rm^3) (1)	<0.042	<0.042	<0.044	<0.043	-
Chromium (µg/Rm^3) (1)	0.72	0.62	0.87	0.74	-
Cobalt (µg/Rm^3) (1)	<0.042	<0.042	<0.044	<0.043	-
Copper (µg/Rm^3) (1)	1.96	1.67	1.94	1.86	-
Molybdenum (µg/Rm^3) (1)	6.52	7.01	7.12	6.88	-
Nickel (µg/Rm^3) (1)	0.42	0.47	1.10	0.66	-
Selenium (µg/Rm^3) (1)	<0.21	<0.21	<0.22	<0.21	-
Silver (µg/Rm^3) (1)	<0.042	<0.042	<0.044	<0.043	-
Thallium (µg/Rm^3) (1)	<0.042	<0.042	<0.044	<0.043	-
Vanadium (µg/Rm^3) (1)	<0.021	<0.021	<0.022	<0.021	-
Zinc (µg/Rm^3) (1)	3.16	2.65	3.21	3.01	-
Dioxins and Furans (pg TEQ/Rm^3) (3)	<2.22	<3.35	<2.10	<2.56	60
Total Chlorobenzenes (ng/Rm^3) (1)	<104	<77.1	<114	<98.1	-
Total Chlorophenols (ng/Rm^3) (1)	<168	<165	<164	<166	-
Total PAHs (ng/Rm^3) (1)	<178	<215	<208	<201	-
VOCs (µg/Rm^3) (1)	<49.2	<55.3	<34.9	<46.5	-
Aldehydes (µg/Rm^3) (1)	<36.5	<37.2	<44.5	<39.4	-
Total VOCs (µg/Rm^3) (1) (4)	<85.7	<92.5	<79.4	<85.9	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	0	0	0	0	50

* based on process data provided by Covanta

(1) dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

(2) dry basis as equivalent methane (average of each 60 minute test with data recorded in 1-minute intervals)

(3) calculated using the NATO/CCMS (1989) toxicity equivalence factors and the full detection limit for those isomers below the analytical detection limit, dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

(4) Includes all components from the volatile organic compounds test list in the ECA (i.e. Volatile Organic Sampling Train and Aldehyde Sampling train components).

A summary of the minimum, average and maximum concentrations for the combustion gases measured by the DYEC CEMS with in-stack limits listed in the ECA is provided below for the two units.

Boiler No.	Parameter	Minimum	Average	Maximum	In-Stack Limit
Boiler No. 1	Carbon Monoxide (mg/Rm^3) (1)	6	9.7	17.5	40
	Hydrogen Chloride (mg/Rm^3) (2)	1.7	2.2	2.5	9
	Nitrogen Oxides (mg/Rm^3) (2)	111	111	112	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0.3	0.6	35
Boiler No. 2	Carbon Monoxide (mg/Rm^3) (1)	7.3	11.7	23.0	40
	Hydrogen Chloride (mg/Rm^3) (2)	0.5	1.8	3.1	9
	Nitrogen Oxides (mg/Rm^3) (2)	109	110	111	121
	Sulphur Dioxide (mg/Rm^3) (2)	0	0.2	0.8	35

(1) 4-hour average measured by DYEC CEMS, dry at 25°C and 1 atmosphere adjusted to 11% oxygen by volume
(2) 24-hour average measured by DYEC CEMS, dry at 25°C and 1 atmosphere adjusted to 11% oxygen by volume

APPENDIX 1

Boiler No. 1 BH Outlet
Data Tables
(93 pages)

TABLE 1
Covanta - Durham York Energy Centre
Boiler No. 1
Isokinetic Sampling Train Test Schedules

Particulate and Metals Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	November 29, 2021	10:30	13:42	180
2	November 29, 2021	14:30	17:40	180
3	November 30, 2021	16:35	19:43	180

Particle Size Distribution Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	November 30, 2021	8:30	10:33	120
2	November 30, 2021	11:30	13:33	120
3	November 30, 2021	14:35	16:38	120

Acid Gases Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	November 29, 2021	10:31	11:31	60
2	November 29, 2021	12:17	13:17	60
3	November 29, 2021	14:29	15:29	60

Semi-Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	December 1, 2021	8:37	12:45	240
2	December 1, 2021	15:59	20:07	240
3	December 2, 2021	8:21	12:30	240

* Actual sampling time excluding leak-checks, traverse changes and process down time.

TABLE 2
Covanta - Durham York Energy Centre
Boiler No. 1
Organic Compounds Test Schedules

Acrolein and Aldehydes Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	December 1, 2021	12:26	13:26	60
2	December 1, 2021	13:31	14:31	60
3	December 1, 2021	14:44	15:44	60

Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	December 1, 2021	8:38	9:18	40
2	December 1, 2021	9:23	10:03	40
3	December 1, 2021	10:09	10:49	40
4	December 1, 2021	10:52	11:32	40

Total Hydrocarbons Trains

Sampling Location	Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
BH Outlet	1	November 29, 2021	14:43	15:43	60
BH Outlet	2	November 29, 2021	15:50	16:50	60
BH Outlet	3	November 29, 2021	16:57	17:57	60
Quench Inlet	1	November 29, 2021	14:43	15:43	60
Quench Inlet	2	November 29, 2021	15:50	16:50	60
Quench Inlet	3	November 29, 2021	16:57	17:57	60

TABLE 3
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Stack Gas Sampling Parameters

Particulate and Metals Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.848	1.026	6.43	3.764	100.5
2	0.848	1.026	6.43	3.831	100.1
3	0.844	1.026	6.49	4.025	99.0

Particle Size Distribution Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.845	1.000	4.51	1.203	90.7
2	0.845	1.000	4.51	1.203	95.8
3	0.845	1.000	4.51	1.235	95.9

Acid Gases Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.842	0.996	6.38	1.190	98.1
2	0.842	0.996	6.38	1.173	99.7
3	0.842	0.996	6.38	1.230	100.3

Semi-Volatile Organic Compounds Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.844	1.000	6.40	4.718	100.0
2	0.844	1.000	6.40	4.889	98.7
3	0.846	1.000	6.38	4.606	95.9

* Dry at 25°C and 1 atmosphere

TABLE 4
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Stack Gas Physical Parameters

Particulate and Metals Trains

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	140	14.1	17.8	-2.69	98.0	10.7	8.80
2	143	15.1	18.6	-2.69	97.9	10.5	8.90
3	143	14.9	19.5	-2.89	97.1	10.4	9.10
Average	142	14.7	18.6	-2.76	97.7	10.5	8.93

Particle Size Distribution Trains

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	140	15.7	19.3	-2.89	97.3	10.8	8.59
2	139	15.4	18.5	-2.89	97.2	10.7	8.62
3	141	16.7	19.5	-2.89	97.1	10.6	8.66
Average	140	15.9	19.1	-2.89	97.2	10.7	8.62

Acid Gases Trains **

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	140	14.5	17.7	-2.69	98.1	10.7	8.90
2	141	15.4	17.4	-2.69	98.0	10.8	8.66
3	142	16.3	18.4	-2.69	97.9	10.6	8.80
Average	141	15.4	17.8	-2.69	98.0	10.7	8.79

Semi-Volatile Organics Trains

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	139	15.5	17.2	-2.91	98.1	10.9	8.56
2	144	16.3	18.5	-2.91	97.7	10.9	8.48
3	139	15.8	18.1	-2.54	96.2	10.9	8.33
Average	141	15.9	17.9	-2.79	97.3	10.9	8.46

* Dry basis, measured by the DYEC CEMS

** Sampling was conducted isokinetically on a single traverse in the duct.

TABLE 5
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Stack Gas Volumetric Flowrates

Particulate and Metals Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	26.3	15.8	19.3	18.3
2	27.4	16.1	19.5	19.0
3	28.8	16.8	20.0	19.8
Average	27.5	16.2	19.6	19.0

Particle Size Distribution Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	28.6	16.7	20.8	19.8
2	27.4	16.1	20.0	19.0
3	28.8	16.6	20.5	19.9
Average	28.3	16.5	20.4	19.6

Acid Gases Trains ***

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	26.1	15.6	18.9	18.2
2	25.7	15.1	18.7	17.9
3	27.1	15.8	19.3	18.8
Average	26.3	15.5	19.0	18.3

Semi-Volatile Organics Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	25.4	15.0	18.7	17.8
2	27.4	15.8	19.8	18.9
3	26.7	15.4	19.6	18.3
Average	26.5	15.4	19.4	18.3

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

*** Sampling was conducted isokinetically on a single traverse in the duct. Volumetric flowrates from the corresponding particulate and metals tests were used to calculate emission data.

TABLE 6
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Particulate Emission Data

Test No.	Particulate Collected			Dry Gas Volume Sampled	Actual	Particulate Concentration			Particulate Emission Rate
	Probe Rinse	Main Filter	Total			Dry Reference	Dry Adjusted	Wet Reference	
	mg	mg	mg	Rm^3*	mg/m^3	mg/Rm^3*	mg/Rm^3**	mg/Rm^3*	mg/s
1	0.5	0.9	1.4	3.764	0.22	0.37	0.30	0.32	5.86
2	3.4	0.2	3.6	3.831	0.55	0.94	0.78	0.80	15.1
3	1.7	<0.1	<1.8	4.025	<0.26	<0.45	<0.38	<0.38	<7.51
Average					<0.35	<0.59	<0.48	<0.50	<9.50
Blank	0.5	0.6	1.1						

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 7
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
$PM_{2.5}$ and PM_{10} Emission Data

$PM_{2.5}$

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	$PM_{2.5}$ Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	<0.1	1.203	<0.049	<0.083	<0.067	<0.070	<1.39
2	<0.5	1.203	<0.24	<0.42	<0.34	<0.35	<6.69
3	<0.4	1.235	<0.19	<0.32	<0.26	<0.27	<5.38
Average			<0.16	<0.27	<0.22	<0.23	<4.49
Blank	0.9						

PM_{10}

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	PM_{10} Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	<0.3	1.203	<0.15	<0.25	<0.20	<0.21	<4.16
2	<0.8	1.203	<0.39	<0.67	<0.54	<0.56	<10.7
3	<0.5	1.235	<0.23	<0.40	<0.33	<0.34	<6.72
Average			<0.26	<0.44	<0.35	<0.37	<7.20
Blank	1.3						

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data. For Test No. 1 the weight gain on the backup filter could not be quantified as it had adhered to the petri dish.

TABLE 8
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Condensable Particulate Emission Data

Inorganic Condensable Particulate

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	Inorganic Condensable Particulate Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	2.4	1.203	1.16	2.00	1.60	1.68	33.3
2	3.1	1.203	1.51	2.58	2.08	2.18	41.5
3	3.5	1.235	1.63	2.83	2.29	2.36	47.0
Average			1.44	2.47	1.99	2.08	40.6
Blank	0.5						

Organic Condensable Particulate

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	Organic Condensable Particulate Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	2.3	1.203	1.12	1.91	1.54	1.61	31.9
2	2.8	1.203	1.37	2.33	1.88	1.97	37.5
3	2.1	1.235	0.98	1.70	1.38	1.42	28.2
Average			1.15	1.98	1.60	1.67	32.5
Blank	1.1						

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 9
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Halides and Ammonia Emission Data

Hydrogen Chloride

Test No.	HCl Collected mg	Dry Volume Sampled Rm^3*	Actual mg/m^3	Hydrogen Chloride Concentration Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HCl Emission Rate mg/s
1	5.17	1.190	2.60	4.34	3.55	3.73	68.4
2	6.32	1.173	3.23	5.39	4.41	4.63	84.9
3	6.17	1.230	2.95	5.02	4.14	4.26	80.8
Average			2.93	4.92	4.03	4.21	78.0
Blank	<0.159						

Hydrogen Fluoride

Test No.	HF Collected mg	Dry Volume Sampled Rm^3*	Actual mg/m^3	Hydrogen Fluoride Concentration Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HF Emission Rate mg/s
1	<0.146	1.190	<0.074	<0.12	<0.10	<0.11	<1.93
2	<0.148	1.173	<0.076	<0.13	<0.10	<0.11	<1.99
3	<0.151	1.230	<0.072	<0.12	<0.10	<0.10	<1.98
Average			<0.074	<0.12	<0.10	<0.11	<1.97
Blank	<0.109						

Ammonia

Test No.	Ammonia Collected mg	Dry Volume Sampled Rm^3*	Actual mg/m^3	Ammonia Concentration Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Ammonia Emission Rate mg/s
1	0.75	1.190	0.38	0.63	0.52	0.54	9.95
2	0.76	1.173	0.39	0.64	0.53	0.55	10.2
3	0.80	1.230	0.38	0.65	0.53	0.55	10.4
Average			0.38	0.64	0.53	0.55	10.2
Blank	<0.293						

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 10
Covanta - Durham York Energy Centre
Boiler No. 1
Combustion Gas Analyses

Data measured by the DYEC CEMS from November 29 to December 2, 2021

Sampling Location	Parameter	Minimum	Average	Maximum
BH Outlet	Oxygen (%, 1 hr Avg)	8.02	8.76	9.78
BH Outlet	Carbon Monoxide (mg/Rm^3, 1 hr Avg) *	4	10	25
BH Outlet	Carbon Monoxide (mg/Rm^3, 4 hr Avg) *	6.0	9.7	17.5
BH Outlet	Sulphur Dioxide (mg/Rm^3, 1 hr Avg) *	0	0.2	9
BH Outlet	Sulphur Dioxide (mg/Rm^3, 24 hr Avg) *	0	0.3	0.6
BH Outlet	Nitrogen Oxides (mg/Rm^3, 1 hr Avg) *	101	111	133
BH Outlet	Nitrogen Oxides (mg/Rm^3, 24 hr Avg) *	111	111	112
BH Outlet	Hydrogen Chloride (mg/Rm^3, 1 hr Avg) *	1	2	4
BH Outlet	Hydrogen Chloride (mg/Rm^3, 24 hr Avg) *	1.7	2.2	2.5
BH Outlet	Total Hydrocarbons (mg/Rm^3, 1 hr Avg) *	0	0	0
Quench Inlet	Oxygen (%, 1 hr Avg)	8	9	10

Data measured by the ORTECH CEMS on November 29, 2021

Sampling Location	Test No.	Parameter	Minimum	Average	Maximum
BH Outlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.2	0.3
BH Outlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.1	0.3
BH Outlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.1	0.4
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.1	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0	0.2
Quench Inlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0	0.5
Quench Inlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0	0.5
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0	0
Quench Inlet	2	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0	0.1
Quench Inlet	3	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0	0.1
Average		Total Hydrocarbons (ppm dry, 10-min Avg)		0	

* Reference conditions, dry basis adjusted to 11% oxygen

TABLE 11
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Metals Analyses Test No. 1

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	2.58	<0.1	2.58
Arsenic	1.15	<0.2	1.15
Barium	7.32	1.04	8.36
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.20	<0.05	0.20
Chromium	3.70	0.47	4.17
Cobalt	<0.2	0.15	0.15
Copper	7.12	4.19	11.3
Lead	2.45	0.56	3.01
Mercury *	<0.015	<0.25	<0.25
Molybdenum	32.0	<0.1	32.0
Nickel	2.52	0.50	3.02
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	16.3	4.82	21.1
Total			<89.0

* Includes the permanganate impingers

Note: "<" indicates that the analyte was not detected. Where all values were reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, the remaining fractions were assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate emission data.

TABLE 12
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Metals Analyses Test No. 2

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	3.45	<0.1	3.45
Arsenic	<1	<0.2	<0.20
Barium	6.06	1.03	7.09
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.12	0.077	0.20
Chromium	2.79	1.02	3.81
Cobalt	<0.2	0.12	0.12
Copper	6.53	3.02	9.55
Lead	1.80	0.52	2.32
Mercury *	<0.015	<0.25	<0.25
Molybdenum	31.4	<0.1	31.4
Nickel	2.03	1.61	3.64
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	0.54	0.54
Zinc	19.3	7.26	26.6
Total			<90.7

* Includes the permanganate impingers

Note: "<" indicates that the analyte was not detected. Where all values were reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, the remaining fractions were assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate emission data.

TABLE 13
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Metals Analyses Test No. 3

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	0.23	<0.1	0.23
Arsenic	<1	0.24	0.24
Barium	5.86	1.49	7.35
Beryllium	<0.2	0.68	0.68
Cadmium	0.11	0.40	0.51
Chromium	2.22	1.17	3.39
Cobalt	<0.2	0.62	0.62
Copper	5.77	3.25	9.02
Lead	0.69	0.37	1.06
Mercury *	<0.015	<0.25	<0.25
Molybdenum	31.5	<0.1	31.5
Nickel	1.66	1.33	2.99
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	0.89	0.89
Vanadium	<1	0.75	0.75
Zinc	14.8	7.98	22.8
Total			<83.5

* Includes the permanganate impingers

Note: "<" indicates that the analyte was not detected. Where all values were reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, the remaining fractions were assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate emission data.

TABLE 14
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Metals Emission Data Test No. 1

Metal	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	2.58	0.41	0.69	0.56	0.59	0.011
Arsenic	1.15	0.18	0.31	0.25	0.26	0.0048
Barium	8.36	1.33	2.22	1.82	1.91	0.035
Beryllium	<0.20	<0.032	<0.053	<0.043	<0.046	<0.00084
Cadmium	0.20	0.032	0.053	0.043	0.046	0.00084
Chromium	4.17	0.66	1.11	0.91	0.95	0.017
Cobalt	0.15	0.024	0.039	0.032	0.034	0.00062
Copper	11.3	1.80	3.00	2.46	2.58	0.047
Lead	3.01	0.48	0.80	0.65	0.69	0.013
Mercury	<0.25	<0.040	<0.066	<0.054	<0.057	<0.0010
Molybdenum	32.0	5.10	8.50	6.96	7.30	0.13
Nickel	3.02	0.48	0.80	0.66	0.69	0.013
Selenium	<1.00	<0.16	<0.27	<0.22	<0.23	<0.0042
Silver	<0.20	<0.032	<0.053	<0.043	<0.046	<0.00084
Thallium	<0.20	<0.032	<0.053	<0.043	<0.046	<0.00084
Vanadium	<0.10	<0.016	<0.027	<0.022	<0.023	<0.00042
Zinc	21.1	3.36	5.61	4.59	4.82	0.088
Total	<89.0	<14.2	<23.7	<19.4	<20.3	<0.37

Dry Gas Volume Sampled (Rm^3*) :	3.764
Actual Flowrate (m^3/s) :	26.3
Dry Reference Flowrate (Rm^3/s*) :	15.8
Dry Adjusted Flowrate (Rm^3/s**) :	19.3
Wet Reference Flowrate (Rm^3/s*) :	18.3

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 15
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Metals Emission Data Test No. 2

Metal	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	3.45	0.53	0.90	0.74	0.76	0.014
Arsenic	<0.20	<0.031	<0.052	<0.043	<0.044	<0.00084
Barium	7.09	1.09	1.85	1.53	1.57	0.030
Beryllium	<0.20	<0.031	<0.052	<0.043	<0.044	<0.00084
Cadmium	0.20	0.030	0.052	0.043	0.044	0.00083
Chromium	3.81	0.58	0.99	0.82	0.84	0.016
Cobalt	0.12	0.019	0.032	0.026	0.027	0.00052
Copper	9.55	1.46	2.49	2.06	2.12	0.040
Lead	2.32	0.36	0.61	0.50	0.51	0.0097
Mercury	<0.25	<0.038	<0.065	<0.054	<0.055	<0.0011
Molybdenum	31.4	4.82	8.20	6.76	6.96	0.13
Nickel	3.64	0.56	0.95	0.78	0.81	0.015
Selenium	<1.00	<0.15	<0.26	<0.22	<0.22	<0.0042
Silver	<0.20	<0.031	<0.052	<0.043	<0.044	<0.00084
Thallium	<0.20	<0.031	<0.052	<0.043	<0.044	<0.00084
Vanadium	0.54	0.083	0.14	0.12	0.12	0.0023
Zinc	26.6	4.07	6.93	5.72	5.88	0.11
Total	<90.7	<13.9	<23.7	<19.5	<20.1	<0.38

Dry Gas Volume Sampled (Rm^3*) :	3.831
Actual Flowrate (m^3/s) :	27.4
Dry Reference Flowrate (Rm^3/s*) :	16.1
Dry Adjusted Flowrate (Rm^3/s**) :	19.5
Wet Reference Flowrate (Rm^3/s*) :	19.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 16
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Metals Emission Data Test No. 3

Metal	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	0.23	0.033	0.057	0.048	0.049	0.00096
Arsenic	0.24	0.035	0.059	0.050	0.051	0.0010
Barium	7.35	1.07	1.83	1.53	1.55	0.031
Beryllium	0.68	0.098	0.17	0.14	0.14	0.0028
Cadmium	0.51	0.074	0.13	0.11	0.11	0.0021
Chromium	3.39	0.49	0.84	0.71	0.72	0.014
Cobalt	0.62	0.090	0.15	0.13	0.13	0.0026
Copper	9.02	1.31	2.24	1.88	1.91	0.038
Lead	1.06	0.15	0.26	0.22	0.22	0.0044
Mercury	<0.25	<0.036	<0.062	<0.052	<0.053	<0.0010
Molybdenum	31.5	4.57	7.83	6.56	6.66	0.13
Nickel	2.99	0.43	0.74	0.62	0.63	0.012
Selenium	<1.00	<0.15	<0.25	<0.21	<0.21	<0.0042
Silver	<0.20	<0.029	<0.050	<0.042	<0.042	<0.00083
Thallium	0.89	0.13	0.22	0.19	0.19	0.0037
Vanadium	0.75	0.11	0.19	0.16	0.16	0.0031
Zinc	22.8	3.30	5.66	4.75	4.81	0.095
Total	<83.5	<12.1	<20.7	<17.4	<17.6	<0.35

Dry Gas Volume Sampled (Rm^3*) :	4.025
Actual Flowrate (m^3/s) :	28.8
Dry Reference Flowrate (Rm^3/s*) :	16.8
Dry Adjusted Flowrate (Rm^3/s**) :	20.0
Wet Reference Flowrate (Rm^3/s*) :	19.8

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 17
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Metal Actual Concentrations

Metal	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/m³	µg/m³	µg/m³	µg/m³	%
Antimony	0.41	0.53	0.033	0.32	79.8
Arsenic	0.18	<0.031	0.035	<0.083	105
Barium	1.33	1.09	1.07	1.16	12.7
Beryllium	<0.032	<0.031	0.098	<0.054	72.2
Cadmium	0.032	0.030	0.074	0.045	54.5
Chromium	0.66	0.58	0.49	0.58	14.9
Cobalt	0.024	0.019	0.090	0.044	90.1
Copper	1.80	1.46	1.31	1.52	16.5
Lead	0.48	0.36	0.15	0.33	49.9
Mercury	<0.040	<0.038	<0.036	<0.038	4.7
Molybdenum	5.10	4.82	4.57	4.83	5.5
Nickel	0.48	0.56	0.43	0.49	12.8
Selenium	<0.16	<0.15	<0.15	<0.15	4.7
Silver	<0.032	<0.031	<0.029	<0.031	4.7
Thallium	<0.032	<0.031	0.13	<0.064	88.6
Vanadium	<0.016	0.083	0.11	<0.069	69.3
Zinc	3.36	4.07	3.30	3.58	12.0
Total	<14.2	<13.9	<12.1	<13.4	8.4

TABLE 18
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Metal Dry Reference Concentrations

Metal	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	0.69	0.90	0.057	0.55	80.0
Arsenic	0.31	<0.052	0.059	<0.14	104
Barium	2.22	1.85	1.83	1.97	11.3
Beryllium	<0.053	<0.052	0.17	<0.091	73.2
Cadmium	0.053	0.052	0.13	0.077	55.5
Chromium	1.11	0.99	0.84	0.98	13.6
Cobalt	0.039	0.032	0.15	0.075	91.0
Copper	3.00	2.49	2.24	2.58	15.1
Lead	0.80	0.61	0.26	0.56	48.9
Mercury	<0.066	<0.065	<0.062	<0.065	3.4
Molybdenum	8.50	8.20	7.83	8.17	4.1
Nickel	0.80	0.95	0.74	0.83	12.8
Selenium	<0.27	<0.26	<0.25	<0.26	3.4
Silver	<0.053	<0.052	<0.050	<0.052	3.4
Thallium	<0.053	<0.052	0.22	<0.11	89.5
Vanadium	<0.027	0.14	0.19	<0.12	69.8
Zinc	5.61	6.93	5.66	6.07	12.4
Total	<23.7	<23.7	<20.7	<22.7	7.5

* At 25°C and 1 atmosphere

TABLE 19
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Metal Dry Adjusted Concentrations

Metal	Dry Adjusted Concentration				Coefficient
	Test No. 1 µg/Rm³**	Test No. 2 µg/Rm³**	Test No. 3 µg/Rm³**	Average µg/Rm³**	of Variation %
Antimony	0.56	0.74	0.048	0.45	80.0
Arsenic	0.25	<0.043	0.050	<0.11	103
Barium	1.82	1.53	1.53	1.63	10.2
Beryllium	<0.043	<0.043	0.14	<0.076	74.5
Cadmium	0.043	0.043	0.11	0.064	56.9
Chromium	0.91	0.82	0.71	0.81	12.4
Cobalt	0.032	0.026	0.13	0.063	92.2
Copper	2.46	2.06	1.88	2.13	13.9
Lead	0.65	0.50	0.22	0.46	48.0
Mercury	<0.054	<0.054	<0.052	<0.053	2.2
Molybdenum	6.96	6.76	6.56	6.76	2.9
Nickel	0.66	0.78	0.62	0.69	12.3
Selenium	<0.22	<0.22	<0.21	<0.21	2.2
Silver	<0.043	<0.043	<0.042	<0.043	2.2
Thallium	<0.043	<0.043	0.19	<0.091	90.7
Vanadium	<0.022	0.12	0.16	<0.098	70.5
Zinc	4.59	5.72	4.75	5.02	12.2
Total	<19.4	<19.5	<17.4	<18.8	6.3

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 20
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Metal Wet Reference Concentrations

Metal	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	0.59	0.76	0.049	0.47	79.8
Arsenic	0.26	<0.044	0.051	<0.12	104
Barium	1.91	1.57	1.55	1.68	11.9
Beryllium	<0.046	<0.044	0.14	<0.078	73.0
Cadmium	0.046	0.044	0.11	0.066	55.3
Chromium	0.95	0.84	0.72	0.84	14.1
Cobalt	0.034	0.027	0.13	0.064	90.8
Copper	2.58	2.12	1.91	2.20	15.7
Lead	0.69	0.51	0.22	0.48	49.3
Mercury	<0.057	<0.055	<0.053	<0.055	3.9
Molybdenum	7.30	6.96	6.66	6.97	4.7
Nickel	0.69	0.81	0.63	0.71	12.5
Selenium	<0.23	<0.22	<0.21	<0.22	3.9
Silver	<0.046	<0.044	<0.042	<0.044	3.9
Thallium	<0.046	<0.044	0.19	<0.093	89.3
Vanadium	<0.023	0.12	0.16	<0.10	69.7
Zinc	4.82	5.88	4.81	5.17	11.9
Total	<20.3	<20.1	<17.6	<19.4	7.7

* At 25°C and 1 atmosphere

TABLE 21
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Metal Emission Rates

Metal	Emission Rate				Coefficient
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	of Variation %
Antimony	0.011	0.014	0.00096	0.0088	80.0
Arsenic	0.0048	<0.00084	0.0010	<0.0022	101
Barium	0.035	0.030	0.031	0.032	8.7
Beryllium	<0.00084	<0.00084	0.0028	<0.0015	76.5
Cadmium	0.00084	0.00083	0.0021	0.0013	59.0
Chromium	0.017	0.016	0.014	0.016	10.4
Cobalt	0.00062	0.00052	0.0026	0.0012	94.0
Copper	0.047	0.040	0.038	0.042	12.1
Lead	0.013	0.0097	0.0044	0.0089	46.5
Mercury	<0.0010	<0.0011	<0.0010	<0.0010	0.3
Molybdenum	0.13	0.13	0.13	0.13	1.0
Nickel	0.013	0.015	0.012	0.013	11.8
Selenium	<0.0042	<0.0042	<0.0042	<0.0042	0.3
Silver	<0.00084	<0.00084	<0.00083	<0.00084	0.3
Thallium	<0.00084	<0.00084	0.0037	<0.0018	92.5
Vanadium	<0.00042	0.0023	0.0031	<0.0019	71.5
Zinc	0.088	0.11	0.095	0.098	12.2
Total	<0.37	<0.38	<0.35	<0.37	4.6

TABLE 22
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Metal Emission Data

Metal	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	0.32	0.55	0.45	0.47	0.0088
Arsenic	<0.083	<0.14	<0.11	<0.12	<0.0022
Barium	1.16	1.97	1.63	1.68	0.032
Beryllium	<0.054	<0.091	<0.076	<0.078	<0.0015
Cadmium	0.045	0.077	0.064	0.066	0.0013
Chromium	0.58	0.98	0.81	0.84	0.016
Cobalt	0.044	0.075	0.063	0.064	0.0012
Copper	1.52	2.58	2.13	2.20	0.042
Lead	0.33	0.56	0.46	0.48	0.0089
Mercury	<0.038	<0.065	<0.053	<0.055	<0.0010
Molybdenum	4.83	8.17	6.76	6.97	0.13
Nickel	0.49	0.83	0.69	0.71	0.013
Selenium	<0.15	<0.26	<0.21	<0.22	<0.0042
Silver	<0.031	<0.052	<0.043	<0.044	<0.00084
Thallium	<0.064	<0.11	<0.091	<0.093	<0.0018
Vanadium	<0.069	<0.12	<0.098	<0.10	<0.0019
Zinc	3.58	6.07	5.02	5.17	0.098
Total	<13.4	<22.7	<18.8	<19.4	<0.37

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 23
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Train Metal Analyses

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	9.33	0.57	9.90
Beryllium	<0.2	<0.1	<0.20
Cadmium	<0.1	<0.05	<0.10
Chromium	3.44	0.31	3.75
Cobalt	<0.2	<0.1	<0.20
Copper	4.89	2.71	7.60
Lead	<0.5	0.29	0.29
Mercury *	<0.015	<0.25	<0.25
Molybdenum	32.9	<0.1	32.9
Nickel	1.56	0.23	1.79
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	<6	<3	<6.00
Total			<64.6

* Includes the permanganate impingers.

Note: "<" indicates that the analyte was not detected. Where all values are reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate the total collected in the blank, the remaining fractions are assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate the total collected in the blank.

TABLE 24
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 1

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	344	0.043	0.073	0.059	0.062	1.10
Pentachlorodibenzo-p-dioxins	738	0.093	0.16	0.13	0.13	2.35
Hexachlorodibenzo-p-dioxins	3100	0.39	0.66	0.53	0.55	9.88
Heptachlorodibenzo-p-dioxins	3590	0.45	0.76	0.61	0.64	11.4
Octachlorodibenzo-p-dioxin	1700	0.21	0.36	0.29	0.30	5.42
Total	9472	1.19	2.01	1.61	1.70	30.2

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	154	0.019	0.033	0.026	0.028	0.49
Pentachlorodibenzofurans	222	0.028	0.047	0.038	0.040	0.71
Hexachlorodibenzofurans	436	0.055	0.092	0.074	0.078	1.39
Heptachlorodibenzofurans	645	0.081	0.14	0.11	0.12	2.06
Octachlorodibenzofuran	216	0.027	0.046	0.037	0.039	0.69
Total	1673	0.21	0.35	0.28	0.30	5.33

Dry Gas Volume Sampled (Rm^3*) :	4.718
Actual Flowrate (m^3/s) :	25.4
Dry Reference Flowrate (Rm^3/s*) :	15.0
Dry Adjusted Flowrate (Rm^3/s**) :	18.7
Wet Reference Flowrate (Rm^3/s*) :	17.8

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 25
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 2

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	492	0.058	0.10	0.080	0.084	1.59
Pentachlorodibenzo-p-dioxins	894	0.11	0.18	0.15	0.15	2.89
Hexachlorodibenzo-p-dioxins	4510	0.53	0.92	0.74	0.77	14.6
Heptachlorodibenzo-p-dioxins	5430	0.64	1.11	0.89	0.93	17.5
Octachlorodibenzo-p-dioxin	2360	0.28	0.48	0.38	0.40	7.62
Total	13686	1.61	2.80	2.23	2.34	44.2

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	184	0.022	0.038	0.030	0.031	0.59
Pentachlorodibenzofurans	259	0.031	0.053	0.042	0.044	0.84
Hexachlorodibenzofurans	767	0.090	0.16	0.13	0.13	2.48
Heptachlorodibenzofurans	915	0.11	0.19	0.15	0.16	2.95
Octachlorodibenzofuran	330	0.039	0.067	0.054	0.056	1.07
Total	2455	0.29	0.50	0.40	0.42	7.92

Dry Gas Volume Sampled (Rm^3*) :	4.889
Actual Flowrate (m^3/s) :	27.4
Dry Reference Flowrate (Rm^3/s*) :	15.8
Dry Adjusted Flowrate (Rm^3/s**) :	19.8
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 26
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 3

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	366	0.046	0.079	0.063	0.067	1.22
Pentachlorodibenzo-p-dioxins	695	0.087	0.15	0.12	0.13	2.33
Hexachlorodibenzo-p-dioxins	3200	0.40	0.69	0.55	0.58	10.7
Heptachlorodibenzo-p-dioxins	3550	0.45	0.77	0.61	0.65	11.9
Octachlorodibenzo-p-dioxin	1630	0.20	0.35	0.28	0.30	5.45
Total	9441	1.18	2.05	1.61	1.72	31.6

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	143	0.018	0.031	0.024	0.026	0.48
Pentachlorodibenzofurans	145	0.018	0.031	0.025	0.026	0.49
Hexachlorodibenzofurans	507	0.064	0.11	0.087	0.093	1.70
Heptachlorodibenzofurans	497	0.062	0.11	0.085	0.091	1.66
Octachlorodibenzofuran	218	0.027	0.047	0.037	0.040	0.73
Total	1510	0.19	0.33	0.26	0.28	5.05

Dry Gas Volume Sampled (Rm^3*) :	4.606
Actual Flowrate (m^3/s) :	26.7
Dry Reference Flowrate (Rm^3/s*) :	15.4
Dry Adjusted Flowrate (Rm^3/s**) :	19.6
Wet Reference Flowrate (Rm^3/s*) :	18.3

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 27
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Actual Concentrations

Dioxins

Congener Group	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzo-p-dioxins	0.043	0.058	0.046	0.049	16.1
Pentachlorodibenzo-p-dioxins	0.093	0.11	0.087	0.095	9.9
Hexachlorodibenzo-p-dioxins	0.39	0.53	0.40	0.44	18.0
Heptachlorodibenzo-p-dioxins	0.45	0.64	0.45	0.51	21.7
Octachlorodibenzo-p-dioxin	0.21	0.28	0.20	0.23	17.4
Total	1.19	1.61	1.18	1.33	18.6

Furans

Congener Group	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzofurans	0.019	0.022	0.018	0.020	9.7
Pentachlorodibenzofurans	0.028	0.031	0.018	0.026	25.4
Hexachlorodibenzofurans	0.055	0.090	0.064	0.070	26.8
Heptachlorodibenzofurans	0.081	0.11	0.062	0.084	27.4
Octachlorodibenzofuran	0.027	0.039	0.027	0.031	21.7
Total	0.21	0.29	0.19	0.23	23.0

TABLE 28
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Dry Reference Concentrations

Dioxins

Congener Group	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	0.073	0.10	0.079	0.084	17.2
Pentachlorodibenzo-p-dioxins	0.16	0.18	0.15	0.16	10.5
Hexachlorodibenzo-p-dioxins	0.66	0.92	0.69	0.76	18.9
Heptachlorodibenzo-p-dioxins	0.76	1.11	0.77	0.88	22.6
Octachlorodibenzo-p-dioxin	0.36	0.48	0.35	0.40	18.2
Total	2.01	2.80	2.05	2.29	19.5

Furans

Congener Group	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	0.033	0.038	0.031	0.034	10.2
Pentachlorodibenzofurans	0.047	0.053	0.031	0.044	25.3
Hexachlorodibenzofurans	0.092	0.16	0.11	0.12	27.8
Heptachlorodibenzofurans	0.14	0.19	0.11	0.14	27.9
Octachlorodibenzofuran	0.046	0.067	0.047	0.054	22.6
Total	0.35	0.50	0.33	0.39	23.8

* At 25°C and 1 atmosphere

TABLE 29
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Dry Adjusted Concentrations

Dioxins

Congener Group	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.059	0.080	0.063	0.067	17.2
Pentachlorodibenzo-p-dioxins	0.13	0.15	0.12	0.13	10.8
Hexachlorodibenzo-p-dioxins	0.53	0.74	0.55	0.60	19.1
Heptachlorodibenzo-p-dioxins	0.61	0.89	0.61	0.70	22.8
Octachlorodibenzo-p-dioxin	0.29	0.38	0.28	0.32	18.4
Total	1.61	2.23	1.61	1.82	19.7

Furans

Congener Group	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.026	0.030	0.024	0.027	10.6
Pentachlorodibenzofurans	0.038	0.042	0.025	0.035	25.9
Hexachlorodibenzofurans	0.074	0.13	0.087	0.095	27.8
Heptachlorodibenzofurans	0.11	0.15	0.085	0.11	28.3
Octachlorodibenzofuran	0.037	0.054	0.037	0.043	22.8
Total	0.28	0.40	0.26	0.31	24.1

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 30
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Wet Reference Concentrations

Dioxins

Congener Group	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	0.062	0.084	0.067	0.071	16.7
Pentachlorodibenzo-p-dioxins	0.13	0.15	0.13	0.14	10.1
Hexachlorodibenzo-p-dioxins	0.55	0.77	0.58	0.64	18.5
Heptachlorodibenzo-p-dioxins	0.64	0.93	0.65	0.74	22.1
Octachlorodibenzo-p-dioxin	0.30	0.40	0.30	0.34	17.7
Total	1.70	2.34	1.72	1.92	19.0

Furans

Congener Group	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	0.028	0.031	0.026	0.028	9.8
Pentachlorodibenzofurans	0.040	0.044	0.026	0.037	25.1
Hexachlorodibenzofurans	0.078	0.13	0.093	0.10	27.3
Heptachlorodibenzofurans	0.12	0.16	0.091	0.12	27.5
Octachlorodibenzofuran	0.039	0.056	0.040	0.045	22.2
Total	0.30	0.42	0.28	0.33	23.3

* At 25°C and 1 atmosphere

TABLE 31
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Emission Rates

Dioxins

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	1.10	1.59	1.22	1.30	19.6
Pentachlorodibenzo-p-dioxins	2.35	2.89	2.33	2.52	12.5
Hexachlorodibenzo-p-dioxins	9.88	14.6	10.7	11.7	21.3
Heptachlorodibenzo-p-dioxins	11.4	17.5	11.9	13.6	24.9
Octachlorodibenzo-p-dioxin	5.42	7.62	5.45	6.16	20.4
Total	30.2	44.2	31.6	35.3	21.8

Furans

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzofurans	0.49	0.59	0.48	0.52	12.2
Pentachlorodibenzofurans	0.71	0.84	0.49	0.68	26.3
Hexachlorodibenzofurans	1.39	2.48	1.70	1.85	30.2
Heptachlorodibenzofurans	2.06	2.95	1.66	2.22	29.7
Octachlorodibenzofuran	0.69	1.07	0.73	0.83	25.0
Total	5.33	7.92	5.05	6.10	25.9

TABLE 32
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Congener Group Emission Data

Dioxins

Congener Group	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	0.049	0.084	0.067	0.071	1.30
Pentachlorodibenzo-p-dioxins	0.095	0.16	0.13	0.14	2.52
Hexachlorodibenzo-p-dioxins	0.44	0.76	0.60	0.64	11.7
Heptachlorodibenzo-p-dioxins	0.51	0.88	0.70	0.74	13.6
Octachlorodibenzo-p-dioxin	0.23	0.40	0.32	0.34	6.16
Total	1.33	2.29	1.82	1.92	35.3

Furans

Congener Group	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	0.020	0.034	0.027	0.028	0.52
Pentachlorodibenzofurans	0.026	0.044	0.035	0.037	0.68
Hexachlorodibenzofurans	0.070	0.12	0.095	0.10	1.85
Heptachlorodibenzofurans	0.084	0.14	0.11	0.12	2.22
Octachlorodibenzofuran	0.031	0.054	0.043	0.045	0.83
Total	0.23	0.39	0.31	0.33	6.10

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 33
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Dioxin and Furan Congener Group Analyses

Dioxins

Congener Group	Blank Train pg	Media Blank pg
Tetrachlorodibenzo-p-dioxins	<0.92	<1.8
Pentachlorodibenzo-p-dioxins	<0.72	<1.1
Hexachlorodibenzo-p-dioxins	<1.1	<3.0
Heptachlorodibenzo-p-dioxins	<2.1	<2.6
Octachlorodibenzo-p-dioxin	<12	<3.6
Total	<16.8	<12.1

Furans

Congener Group	Blank Train pg	Media Blank pg
Tetrachlorodibenzofurans	<0.66	<0.87
Pentachlorodibenzofurans	<0.54	<0.97
Hexachlorodibenzofurans	<0.89	<0.85
Heptachlorodibenzofurans	<1.2	2.34
Octachlorodibenzofuran	<1.6	<2.7
Total	<4.89	<7.73

"<" indicates that the amount detected is less than the detection limit
In these cases the value of the detection limit was used to calculate the total collected.

TABLE 34
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 1

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<2.3	<0.29	<0.49	<0.39	<0.41	<0.0073
12378-pentachlorodibenzo-p-dioxin	9.51	1.19	2.02	1.62	1.70	0.030
123478-hexachlorodibenzo-p-dioxin	<43	<5.39	<9.11	<7.31	<7.70	<0.14
123678-hexachlorodibenzo-p-dioxin	104	13.0	22.0	17.7	18.6	0.33
123789-hexachlorodibenzo-p-dioxin	68.0	8.53	14.4	11.6	12.2	0.22
1234678-heptachlorodibenzo-p-dioxin	1630	204	345	277	292	5.20
Octachlorodibenzo-p-dioxin	1700	213	360	289	304	5.42
2378-tetrachlorodibenzofuran	6.25	0.78	1.32	1.06	1.12	0.020
12378-pentachlorodibenzofuran	11.7	1.47	2.48	1.99	2.09	0.037
23478-pentachlorodibenzofuran	<16	<2.01	<3.39	<2.72	<2.86	<0.051
123478-hexachlorodibenzofuran	<37	<4.64	<7.84	<6.29	<6.62	<0.12
123678-hexachlorodibenzofuran	<31	<3.89	<6.57	<5.27	<5.55	<0.099
234678-hexachlorodibenzofuran	72.0	9.03	15.3	12.2	12.9	0.23
123789-hexachlorodibenzofuran	23.2	2.91	4.92	3.95	4.15	0.074
1234678-heptachlorodibenzofuran	373	46.8	79.1	63.4	66.8	1.19
1234789-heptachlorodibenzofuran	57.9	7.26	12.3	9.85	10.4	0.18
Octachlorodibenzofuran	216	27.1	45.8	36.7	38.7	0.69
PCB 81	<16	<2.01	<3.39	<2.72	<2.86	<0.051
PCB 77	170	21.3	36.0	28.9	30.4	0.54
PCB 123	42.8	5.37	9.07	7.28	7.66	0.14
PCB 118	2290	287	485	390	410	7.30
PCB 114	<49	<6.14	<10.4	<8.34	<8.77	<0.16
PCB 105	716	89.8	152	122	128	2.28
PCB 126	<12	<1.50	<2.54	<2.04	<2.15	<0.038
PCB 167	<28	<3.51	<5.93	<4.76	<5.01	<0.089
PCB 156/157	89.7	11.2	19.0	15.3	16.1	0.29
PCB 169	<7.9	<0.99	<1.67	<1.34	<1.41	<0.025
PCB 189	<20	<2.51	<4.24	<3.40	<3.58	<0.064
Total Dioxins & Furans Only	<4401	<552	<933	<749	<788	<14.0
Total PCBs Only	<3441	<432	<729	<585	<616	<11.0
Total Dioxins & Furans and PCBs	<7842	<983	<1662	<1334	<1404	<25.0

Dry Gas Volume Sampled (Rm³*) :	4.718
Actual Flowrate (m³/s) :	25.4
Dry Reference Flowrate (Rm³/s*) :	15.0
Dry Adjusted Flowrate (Rm³/s**) :	18.7
Wet Reference Flowrate (Rm³/s*) :	17.8

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 35
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 2

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<1.2	<0.14	<0.25	<0.20	<0.21	<0.0039
12378-pentachlorodibenzo-p-dioxin	12.7	1.50	2.60	2.07	2.17	0.041
123478-hexachlorodibenzo-p-dioxin	<67	<7.90	<13.7	<10.9	<11.5	<0.22
123678-hexachlorodibenzo-p-dioxin	157	18.5	32.1	25.6	26.9	0.51
123789-hexachlorodibenzo-p-dioxin	89.1	10.5	18.2	14.5	15.2	0.29
1234678-heptachlorodibenzo-p-dioxin	2470	291	505	403	423	7.97
Octachlorodibenzo-p-dioxin	2360	278	483	385	404	7.62
2378-tetrachlorodibenzofuran	<3.5	<0.41	<0.72	<0.57	<0.60	<0.011
12378-pentachlorodibenzofuran	<10	<1.18	<2.05	<1.63	<1.71	<0.032
23478-pentachlorodibenzofuran	26.1	3.08	5.34	4.26	4.47	0.084
123478-hexachlorodibenzofuran	62.6	7.38	12.8	10.2	10.7	0.20
123678-hexachlorodibenzofuran	<52	<6.13	<10.6	<8.48	<8.90	<0.17
234678-hexachlorodibenzofuran	103	12.1	21.1	16.8	17.6	0.33
123789-hexachlorodibenzofuran	<31	<3.66	<6.34	<5.06	<5.31	<0.10
1234678-heptachlorodibenzofuran	550	64.9	112	89.7	94.1	1.78
1234789-heptachlorodibenzofuran	75.7	8.93	15.5	12.3	13.0	0.24
Octachlorodibenzofuran	330	38.9	67.5	53.8	56.5	1.07
PCB 81	<21	<2.48	<4.30	<3.42	<3.59	<0.068
PCB 77	530	62.5	108	86.4	90.7	1.71
PCB 123	<58	<6.84	<11.9	<9.46	<9.93	<0.19
PCB 118	4130	487	845	674	707	13.3
PCB 114	108	12.7	22.1	17.6	18.5	0.35
PCB 105	1020	120	209	166	175	3.29
PCB 126	<32	<3.77	<6.55	<5.22	<5.48	<0.10
PCB 167	<26	<3.07	<5.32	<4.24	<4.45	<0.084
PCB 156/157	<72	<8.49	<14.7	<11.7	<12.3	<0.23
PCB 169	<11	<1.30	<2.25	<1.79	<1.88	<0.036
PCB 189	26.7	3.15	5.46	4.35	4.57	0.086
Total Dioxins & Furans Only	<6401	<755	<1309	<1044	<1095	<20.7
Total PCBs Only	<6035	<712	<1234	<984	<1033	<19.5
Total Dioxins & Furans and PCBs	<12436	<1466	<2544	<2028	<2128	<40.1

Dry Gas Volume Sampled (Rm³*) :	4.889
Actual Flowrate (m³/s) :	27.4
Dry Reference Flowrate (Rm³/s*) :	15.8
Dry Adjusted Flowrate (Rm³/s**) :	19.8
Wet Reference Flowrate (Rm³/s*) :	18.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 36
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 3

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<1.5	<0.19	<0.33	<0.26	<0.27	<0.0050
12378-pentachlorodibenzo-p-dioxin	9.34	1.17	2.03	1.60	1.71	0.031
123478-hexachlorodibenzo-p-dioxin	57.0	7.15	12.4	9.74	10.4	0.19
123678-hexachlorodibenzo-p-dioxin	113	14.2	24.5	19.3	20.6	0.38
123789-hexachlorodibenzo-p-dioxin	<45	<5.65	<9.77	<7.69	<8.22	<0.15
1234678-heptachlorodibenzo-p-dioxin	1600	201	347	274	292	5.35
Octachlorodibenzo-p-dioxin	1630	204	354	279	298	5.45
2378-tetrachlorodibenzofuran	<2.8	<0.35	<0.61	<0.48	<0.51	<0.0094
12378-pentachlorodibenzofuran	<6.0	<0.75	<1.30	<1.03	<1.10	<0.020
23478-pentachlorodibenzofuran	<20	<2.51	<4.34	<3.42	<3.65	<0.067
123478-hexachlorodibenzofuran	40.0	5.02	8.68	6.84	7.30	0.13
123678-hexachlorodibenzofuran	<35	<4.39	<7.60	<5.98	<6.39	<0.12
234678-hexachlorodibenzofuran	73.5	9.22	16.0	12.6	13.4	0.25
123789-hexachlorodibenzofuran	<3.4	<0.43	<0.74	<0.58	<0.62	<0.011
1234678-heptachlorodibenzofuran	388	48.7	84.2	66.3	70.9	1.30
1234789-heptachlorodibenzofuran	<37	<4.64	<8.03	<6.33	<6.76	<0.12
Octachlorodibenzofuran	218	27.3	47.3	37.3	39.8	0.73
PCB 81	<15	<1.88	<3.26	<2.56	<2.74	<0.050
PCB 77	144	18.1	31.3	24.6	26.3	0.48
PCB 123	81.7	10.2	17.7	14.0	14.9	0.27
PCB 118	3470	435	753	593	634	11.6
PCB 114	<89	<11.2	<19.3	<15.2	<16.3	<0.30
PCB 105	1050	132	228	180	192	3.51
PCB 126	<29	<3.64	<6.30	<4.96	<5.30	<0.097
PCB 167	<28	<3.51	<6.08	<4.79	<5.11	<0.094
PCB 156/157	78.6	9.86	17.1	13.4	14.4	0.26
PCB 169	<12	<1.51	<2.61	<2.05	<2.19	<0.040
PCB 189	<12	<1.51	<2.61	<2.05	<2.19	<0.040
Total Dioxins & Furans Only	<4280	<537	<929	<732	<782	<14.3
Total PCBs Only	<5009	<628	<1088	<856	<915	<16.8
Total Dioxins & Furans and PCBs	<9289	<1165	<2017	<1588	<1696	<31.1

Dry Gas Volume Sampled (Rm³*) :	4.606
Actual Flowrate (m³/s) :	26.7
Dry Reference Flowrate (Rm³/s*) :	15.4
Dry Adjusted Flowrate (Rm³/s**) :	19.6
Wet Reference Flowrate (Rm³/s*) :	18.3

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 37
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Actual Concentrations

Specific Isomer	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/m³	pg/m³	pg/m³	pg/m³	%
2378-tetrachlorodibenzo-p-dioxin	<0.29	<0.14	<0.19	<0.21	36.4
12378-pentachlorodibenzo-p-dioxin	1.19	1.50	1.17	1.29	14.1
123478-hexachlorodibenzo-p-dioxin	<5.39	<7.90	7.15	<6.81	18.9
123678-hexachlorodibenzo-p-dioxin	13.0	18.5	14.2	15.2	18.9
123789-hexachlorodibenzo-p-dioxin	8.53	10.5	<5.65	<8.23	29.7
1234678-heptachlorodibenzo-p-dioxin	204	291	201	232	22.1
Octachlorodibenzo-p-dioxin	213	278	204	232	17.4
2378-tetrachlorodibenzofuran	0.78	<0.41	<0.35	<0.52	45.4
12378-pentachlorodibenzofuran	1.47	<1.18	<0.75	<1.13	31.7
23478-pentachlorodibenzofuran	<2.01	3.08	<2.51	<2.53	21.2
123478-hexachlorodibenzofuran	<4.64	7.38	5.02	<5.68	26.2
123678-hexachlorodibenzofuran	<3.89	<6.13	<4.39	<4.80	24.5
234678-hexachlorodibenzofuran	9.03	12.1	9.22	10.1	17.2
123789-hexachlorodibenzofuran	2.91	<3.66	<0.43	<2.33	72.5
1234678-heptachlorodibenzofuran	46.8	64.9	48.7	53.4	18.6
1234789-heptachlorodibenzofuran	7.26	8.93	<4.64	<6.94	31.1
Octachlorodibenzofuran	27.1	38.9	27.3	31.1	21.7
PCB 81	<2.01	<2.48	<1.88	<2.12	14.8
PCB 77	21.3	62.5	18.1	34.0	72.9
PCB 123	5.37	<6.84	10.2	<7.49	33.5
PCB 118	287	487	435	403	25.7
PCB 114	<6.14	12.7	<11.2	<10.0	34.4
PCB 105	89.8	120	132	114	19.0
PCB 126	<1.50	<3.77	<3.64	<2.97	42.8
PCB 167	<3.51	<3.07	<3.51	<3.36	7.7
PCB 156/157	11.2	<8.49	9.86	<9.87	14.0
PCB 169	<0.99	<1.30	<1.51	<1.26	20.5
PCB 189	<2.51	3.15	<1.51	<2.39	34.7
Total Dioxins & Furans Only	<552	<755	<537	<615	19.8
Total PCBs Only	<432	<712	<628	<591	24.4
Total Dioxins & Furans and PCBs	<983	<1466	<1165	<1205	20.2

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 38
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.49	<0.25	<0.33	<0.35	34.9
12378-pentachlorodibenzo-p-dioxin	2.02	2.60	2.03	2.21	15.0
123478-hexachlorodibenzo-p-dioxin	<9.11	<13.7	12.4	<11.7	20.1
123678-hexachlorodibenzo-p-dioxin	22.0	32.1	24.5	26.2	20.0
123789-hexachlorodibenzo-p-dioxin	14.4	18.2	<9.77	<14.1	30.0
1234678-heptachlorodibenzo-p-dioxin	345	505	347	399	23.0
Octachlorodibenzo-p-dioxin	360	483	354	399	18.2
2378-tetrachlorodibenzofuran	1.32	<0.72	<0.61	<0.88	43.8
12378-pentachlorodibenzofuran	2.48	<2.05	<1.30	<1.94	30.6
23478-pentachlorodibenzofuran	<3.39	5.34	<4.34	<4.36	22.3
123478-hexachlorodibenzofuran	<7.84	12.8	8.68	<9.78	27.2
123678-hexachlorodibenzofuran	<6.57	<10.6	<7.60	<8.27	25.6
234678-hexachlorodibenzofuran	15.3	21.1	16.0	17.4	18.2
123789-hexachlorodibenzofuran	4.92	<6.34	<0.74	<4.00	72.8
1234678-heptachlorodibenzofuran	79.1	112	84.2	91.9	19.6
1234789-heptachlorodibenzofuran	12.3	15.5	<8.03	<11.9	31.3
Octachlorodibenzofuran	45.8	67.5	47.3	53.5	22.6
PCB 81	<3.39	<4.30	<3.26	<3.65	15.5
PCB 77	36.0	108	31.3	58.6	73.8
PCB 123	9.07	<11.9	17.7	<12.9	34.3
PCB 118	485	845	753	694	26.9
PCB 114	<10.4	22.1	<19.3	<17.3	35.4
PCB 105	152	209	228	196	20.2
PCB 126	<2.54	<6.55	<6.30	<5.13	43.7
PCB 167	<5.93	<5.32	<6.08	<5.78	7.0
PCB 156/157	19.0	<14.7	17.1	<16.9	12.7
PCB 169	<1.67	<2.25	<2.61	<2.18	21.6
PCB 189	<4.24	5.46	<2.61	<4.10	34.9
Total Dioxins & Furans Only	<933	<1309	<929	<1057	20.7
Total PCBs Only	<729	<1234	<1088	<1017	25.5
Total Dioxins & Furans and PCBs	<1662	<2544	<2017	<2074	21.4

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 39
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.39	<0.20	<0.26	<0.28	35.6
12378-pentachlorodibenzo-p-dioxin	1.62	2.07	1.60	1.76	15.2
123478-hexachlorodibenzo-p-dioxin	<7.31	<10.9	9.74	<9.33	19.7
123678-hexachlorodibenzo-p-dioxin	17.7	25.6	19.3	20.9	20.0
123789-hexachlorodibenzo-p-dioxin	11.6	14.5	<7.69	<11.3	30.4
1234678-heptachlorodibenzo-p-dioxin	277	403	274	318	23.2
Octachlorodibenzo-p-dioxin	289	385	279	318	18.4
2378-tetrachlorodibenzofuran	1.06	<0.57	<0.48	<0.70	44.6
12378-pentachlorodibenzofuran	1.99	<1.63	<1.03	<1.55	31.5
23478-pentachlorodibenzofuran	<2.72	4.26	<3.42	<3.47	22.2
123478-hexachlorodibenzofuran	<6.29	10.2	6.84	<7.78	27.3
123678-hexachlorodibenzofuran	<5.27	<8.48	<5.98	<6.58	25.6
234678-hexachlorodibenzofuran	12.2	16.8	12.6	13.9	18.3
123789-hexachlorodibenzofuran	3.95	<5.06	<0.58	<3.19	72.9
1234678-heptachlorodibenzofuran	63.4	89.7	66.3	73.2	19.7
1234789-heptachlorodibenzofuran	9.85	12.3	<6.33	<9.51	31.8
Octachlorodibenzofuran	36.7	53.8	37.3	42.6	22.8
PCB 81	<2.72	<3.42	<2.56	<2.90	15.8
PCB 77	28.9	86.4	24.6	46.7	74.0
PCB 123	7.28	<9.46	14.0	<10.2	33.3
PCB 118	390	674	593	552	26.5
PCB 114	<8.34	17.6	<15.2	<13.7	35.1
PCB 105	122	166	180	156	19.4
PCB 126	<2.04	<5.22	<4.96	<4.07	43.3
PCB 167	<4.76	<4.24	<4.79	<4.60	6.7
PCB 156/157	15.3	<11.7	13.4	<13.5	13.0
PCB 169	<1.34	<1.79	<2.05	<1.73	20.7
PCB 189	<3.40	4.35	<2.05	<3.27	35.4
Total Dioxins & Furans Only	<749	<1044	<732	<841	20.9
Total PCBs Only	<585	<984	<856	<809	25.2
Total Dioxins & Furans and PCBs	<1334	<2028	<1588	<1650	21.3

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 40
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.41	<0.21	<0.27	<0.30	35.4
12378-pentachlorodibenzo-p-dioxin	1.70	2.17	1.71	1.86	14.5
123478-hexachlorodibenzo-p-dioxin	<7.70	<11.5	10.4	<9.86	19.7
123678-hexachlorodibenzo-p-dioxin	18.6	26.9	20.6	22.0	19.5
123789-hexachlorodibenzo-p-dioxin	12.2	15.2	<8.22	<11.9	29.7
1234678-heptachlorodibenzo-p-dioxin	292	423	292	336	22.5
Octachlorodibenzo-p-dioxin	304	404	298	335	17.7
2378-tetrachlorodibenzofuran	1.12	<0.60	<0.51	<0.74	44.2
12378-pentachlorodibenzofuran	2.09	<1.71	<1.10	<1.63	30.8
23478-pentachlorodibenzofuran	<2.86	4.47	<3.65	<3.66	21.9
123478-hexachlorodibenzofuran	<6.62	10.7	7.30	<8.21	26.7
123678-hexachlorodibenzofuran	<5.55	<8.90	<6.39	<6.95	25.1
234678-hexachlorodibenzofuran	12.9	17.6	13.4	14.6	17.7
123789-hexachlorodibenzofuran	4.15	<5.31	<0.62	<3.36	72.7
1234678-heptachlorodibenzofuran	66.8	94.1	70.9	77.2	19.1
1234789-heptachlorodibenzofuran	10.4	13.0	<6.76	<10.0	31.1
Octachlorodibenzofuran	38.7	56.5	39.8	45.0	22.2
PCB 81	<2.86	<3.59	<2.74	<3.07	15.1
PCB 77	30.4	90.7	26.3	49.1	73.4
PCB 123	7.66	<9.93	14.9	<10.8	34.3
PCB 118	410	707	634	583	26.5
PCB 114	<8.77	18.5	<16.3	<14.5	35.1
PCB 105	128	175	192	165	20.0
PCB 126	<2.15	<5.48	<5.30	<4.31	43.5
PCB 167	<5.01	<4.45	<5.11	<4.86	7.4
PCB 156/157	16.1	<12.3	14.4	<14.2	13.1
PCB 169	<1.41	<1.88	<2.19	<1.83	21.4
PCB 189	<3.58	4.57	<2.19	<3.45	34.7
Total Dioxins & Furans Only	<788	<1095	<782	<888	20.2
Total PCBs Only	<616	<1033	<915	<855	25.1
Total Dioxins & Furans and PCBs	<1404	<2128	<1696	<1743	20.9

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 41
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Rates

Specific Isomer	Emission Rate				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/s	ng/s	ng/s	ng/s	%
2378-tetrachlorodibenzo-p-dioxin	<0.0073	<0.0039	<0.0050	<0.0054	32.6
12378-pentachlorodibenzo-p-dioxin	0.030	0.041	0.031	0.034	17.3
123478-hexachlorodibenzo-p-dioxin	<0.14	<0.22	0.19	<0.18	22.3
123678-hexachlorodibenzo-p-dioxin	0.33	0.51	0.38	0.41	22.4
123789-hexachlorodibenzo-p-dioxin	0.22	0.29	<0.15	<0.22	31.4
1234678-heptachlorodibenzo-p-dioxin	5.20	7.97	5.35	6.17	25.3
Octachlorodibenzo-p-dioxin	5.42	7.62	5.45	6.16	20.4
2378-tetrachlorodibenzofuran	0.020	<0.011	<0.0094	<0.014	41.5
12378-pentachlorodibenzofuran	0.037	<0.032	<0.020	<0.030	29.6
23478-pentachlorodibenzofuran	<0.051	0.084	<0.067	<0.067	24.7
123478-hexachlorodibenzofuran	<0.12	0.20	0.13	<0.15	29.5
123678-hexachlorodibenzofuran	<0.099	<0.17	<0.12	<0.13	28.0
234678-hexachlorodibenzofuran	0.23	0.33	0.25	0.27	20.5
123789-hexachlorodibenzofuran	0.074	<0.10	<0.011	<0.062	73.7
1234678-heptachlorodibenzofuran	1.19	1.78	1.30	1.42	21.9
1234789-heptachlorodibenzofuran	0.18	0.24	<0.12	<0.18	32.7
Octachlorodibenzofuran	0.69	1.07	0.73	0.83	25.0
PCB 81	<0.051	<0.068	<0.050	<0.056	17.6
PCB 77	0.54	1.71	0.48	0.91	76.0
PCB 123	0.14	<0.19	0.27	<0.20	34.8
PCB 118	7.30	13.3	11.6	10.7	28.9
PCB 114	<0.16	0.35	<0.30	<0.27	37.3
PCB 105	2.28	3.29	3.51	3.03	21.7
PCB 126	<0.038	<0.10	<0.097	<0.080	45.1
PCB 167	<0.089	<0.084	<0.094	<0.089	5.5
PCB 156/157	0.29	<0.23	0.26	<0.26	10.3
PCB 169	<0.025	<0.036	<0.040	<0.034	22.8
PCB 189	<0.064	0.086	<0.040	<0.063	36.3
Total Dioxins & Furans Only	<14.0	<20.7	<14.3	<16.3	22.9
Total PCBs Only	<11.0	<19.5	<16.8	<15.7	27.6
Total Dioxins & Furans and PCBs	<25.0	<40.1	<31.1	<32.1	23.8

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 42
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Specific Isomer Emission Data

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.21	<0.35	<0.28	<0.30	<0.0054
12378-pentachlorodibenzo-p-dioxin	1.29	2.21	1.76	1.86	0.034
123478-hexachlorodibenzo-p-dioxin	<6.81	<11.7	<9.33	<9.86	<0.18
123678-hexachlorodibenzo-p-dioxin	15.2	26.2	20.9	22.0	0.41
123789-hexachlorodibenzo-p-dioxin	<8.23	<14.1	<11.3	<11.9	<0.22
1234678-heptachlorodibenzo-p-dioxin	232	399	318	336	6.17
Octachlorodibenzo-p-dioxin	232	399	318	335	6.16
2378-tetrachlorodibenzofuran	<0.52	<0.88	<0.70	<0.74	<0.014
12378-pentachlorodibenzofuran	<1.13	<1.94	<1.55	<1.63	<0.030
23478-pentachlorodibenzofuran	<2.53	<4.36	<3.47	<3.66	<0.067
123478-hexachlorodibenzofuran	<5.68	<9.78	<7.78	<8.21	<0.15
123678-hexachlorodibenzofuran	<4.80	<8.27	<6.58	<6.95	<0.13
234678-hexachlorodibenzofuran	10.1	17.4	13.9	14.6	0.27
123789-hexachlorodibenzofuran	<2.33	<4.00	<3.19	<3.36	<0.062
1234678-heptachlorodibenzofuran	53.4	91.9	73.2	77.2	1.42
1234789-heptachlorodibenzofuran	<6.94	<11.9	<9.51	<10.0	<0.18
Octachlorodibenzofuran	31.1	53.5	42.6	45.0	0.83
PCB 81	<2.12	<3.65	<2.90	<3.07	<0.056
PCB 77	34.0	58.6	46.7	49.1	0.91
PCB 123	<7.49	<12.9	<10.2	<10.8	<0.20
PCB 118	403	694	552	583	10.7
PCB 114	<10.0	<17.3	<13.7	<14.5	<0.27
PCB 105	114	196	156	165	3.03
PCB 126	<2.97	<5.13	<4.07	<4.31	<0.080
PCB 167	<3.36	<5.78	<4.60	<4.86	<0.089
PCB 156/157	<9.87	<16.9	<13.5	<14.2	<0.26
PCB 169	<1.26	<2.18	<1.73	<1.83	<0.034
PCB 189	<2.39	<4.10	<3.27	<3.45	<0.063
Total Dioxins & Furans Only	<615	<1057	<841	<888	<16.3
Total PCBs Only	<591	<1017	<809	<855	<15.7
Total Dioxins & Furans and PCBs	<1205	<2074	<1650	<1743	<32.1

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 43
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Dioxin and Furan Specific Isomer Analyses

Specific Isomer	Blank Train pg	Media Blank pg
2378-tetrachlorodibenzo-p-dioxin	<0.92	<1.8
12378-pentachlorodibenzo-p-dioxin	<0.72	<1.1
123478-hexachlorodibenzo-p-dioxin	<1.1	<3.0
123678-hexachlorodibenzo-p-dioxin	<0.89	<2.3
123789-hexachlorodibenzo-p-dioxin	<0.94	<2.5
1234678-heptachlorodibenzo-p-dioxin	<5.3	<2.6
Octachlorodibenzo-p-dioxin	<12	<3.6
2378-tetrachlorodibenzofuran	<0.66	<0.87
12378-pentachlorodibenzofuran	<1.3	<3.1
23478-pentachlorodibenzofuran	<0.48	<1.7
123478-hexachlorodibenzofuran	<0.79	<1.3
123678-hexachlorodibenzofuran	<0.64	<0.84
234678-hexachlorodibenzofuran	<0.72	<0.69
123789-hexachlorodibenzofuran	<1.9	<2.8
1234678-heptachlorodibenzofuran	<1.9	2.34
1234789-heptachlorodibenzofuran	<1.2	<1.5
Octachlorodibenzofuran	<1.6	<2.7
PCB 81	<6.0	<5.8
PCB 77	<5.5	<6.2
PCB 123	<7.0	<6.8
PCB 118	18.7	<13
PCB 114	<7.0	<6.7
PCB 105	<6.4	<6.8
PCB 126	<6.6	<6.5
PCB 167	<3.4	<4.2
PCB 156/157	<4.6	<5.5
PCB 169	<3.5	<4.5
PCB 189	<2.4	<3.5
Total Dioxins & Furans Only	<33.1	<34.7
Total PCBs Only	<71	<69.5
Total Dioxins & Furans and PCBs	<104	<104

"<" indicates that the amount detected is less than the detection limit
In these cases the value of the detection limit was used to calculate the total collected.

TABLE 44
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Actual Concentrations

Specific Isomer	Toxicity Equivalency Factor	Actual Concentration Test No. 1 pg TEQ/m³	Test No. 2 pg TEQ/m³	Test No. 3 pg TEQ/m³	Average pg TEQ/m³
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.29	<0.14	<0.19	<0.21
12378-pentachlorodibenzo-p-dioxin	1.00000	1.19	1.50	1.17	1.29
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.54	<0.79	0.72	<0.68
123678-hexachlorodibenzo-p-dioxin	0.10000	1.30	1.85	1.42	1.52
123789-hexachlorodibenzo-p-dioxin	0.10000	0.85	1.05	<0.56	<0.82
1234678-heptachlorodibenzo-p-dioxin	0.01000	2.04	2.91	2.01	2.32
Octachlorodibenzo-p-dioxin	0.00030	0.064	0.083	0.061	0.070
2378-tetrachlorodibenzofuran	0.10000	0.078	<0.041	<0.035	<0.052
12378-pentachlorodibenzofuran	0.03000	0.044	<0.035	<0.023	<0.034
23478-pentachlorodibenzofuran	0.30000	<0.60	0.92	<0.75	<0.76
123478-hexachlorodibenzofuran	0.10000	<0.46	0.74	0.50	<0.57
123678-hexachlorodibenzofuran	0.10000	<0.39	<0.61	<0.44	<0.48
234678-hexachlorodibenzofuran	0.10000	0.90	1.21	0.92	1.01
123789-hexachlorodibenzofuran	0.10000	0.29	<0.37	<0.043	<0.23
1234678-heptachlorodibenzofuran	0.01000	0.47	0.65	0.49	0.53
1234789-heptachlorodibenzofuran	0.01000	0.073	0.089	<0.046	<0.069
Octachlorodibenzofuran	0.00030	0.0081	0.012	0.0082	0.0093
PCB 81	0.00030	<0.00060	<0.00074	<0.00056	<0.00064
PCB 77	0.00010	0.0021	0.0063	0.0018	0.0034
PCB 123	0.00003	0.00016	<0.00021	0.00031	<0.00022
PCB 118	0.00003	0.0086	0.015	0.013	0.012
PCB 114	0.00003	<0.00018	0.00038	<0.00033	<0.00030
PCB 105	0.00003	0.0027	0.0036	0.0040	0.0034
PCB 126	0.10000	<0.15	<0.38	<0.36	<0.30
PCB 167	0.00003	<0.00011	<0.000092	<0.00011	<0.00010
PCB 156/157	0.00003	0.00034	<0.00025	0.00030	<0.00030
PCB 169	0.03000	<0.030	<0.039	<0.045	<0.038
PCB 189	0.00003	<0.000075	0.000094	<0.000045	<0.000072
Total Dioxins & Furans Only		<9.60	<13.0	<9.38	<10.7
Total PCBs Only		<0.20	<0.44	<0.43	<0.36
Total Dioxins & Furans and PCBs		<9.80	<13.5	<9.81	<11.0

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 45
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Dry Reference Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.49	<0.25	<0.33	<0.35
12378-pentachlorodibenzo-p-dioxin	1.00000	2.02	2.60	2.03	2.21
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.91	<1.37	1.24	<1.17
123678-hexachlorodibenzo-p-dioxin	0.10000	2.20	3.21	2.45	2.62
123789-hexachlorodibenzo-p-dioxin	0.10000	1.44	1.82	<0.98	<1.41
1234678-heptachlorodibenzo-p-dioxin	0.01000	3.45	5.05	3.47	3.99
Octachlorodibenzo-p-dioxin	0.00030	0.11	0.14	0.11	0.12
2378-tetrachlorodibenzofuran	0.10000	0.13	<0.072	<0.061	<0.088
12378-pentachlorodibenzofuran	0.03000	0.074	<0.061	<0.039	<0.058
23478-pentachlorodibenzofuran	0.30000	<1.02	1.60	<1.30	<1.31
123478-hexachlorodibenzofuran	0.10000	<0.78	1.28	0.87	<0.98
123678-hexachlorodibenzofuran	0.10000	<0.66	<1.06	<0.76	<0.83
234678-hexachlorodibenzofuran	0.10000	1.53	2.11	1.60	1.74
123789-hexachlorodibenzofuran	0.10000	0.49	<0.63	<0.074	<0.40
1234678-heptachlorodibenzofuran	0.01000	0.79	1.12	0.84	0.92
1234789-heptachlorodibenzofuran	0.01000	0.12	0.15	<0.080	<0.12
Octachlorodibenzofuran	0.00030	0.014	0.020	0.014	0.016
PCB 81	0.00030	<0.0010	<0.0013	<0.00098	<0.0011
PCB 77	0.00010	0.0036	0.011	0.0031	0.0059
PCB 123	0.00003	0.00027	<0.00036	0.00053	<0.00039
PCB 118	0.00003	0.015	0.025	0.023	0.021
PCB 114	0.00003	<0.00031	0.00066	<0.00058	<0.00052
PCB 105	0.00003	0.0046	0.0063	0.0068	0.0059
PCB 126	0.10000	<0.25	<0.65	<0.63	<0.51
PCB 167	0.00003	<0.00018	<0.00016	<0.00018	<0.00017
PCB 156/157	0.00003	0.00057	<0.00044	0.00051	<0.00051
PCB 169	0.03000	<0.050	<0.067	<0.078	<0.065
PCB 189	0.00003	<0.00013	0.00016	<0.000078	<0.00012
Total Dioxins & Furans Only		<16.2	<22.6	<16.2	<18.3
Total PCBs Only		<0.33	<0.77	<0.74	<0.61
Total Dioxins & Furans and PCBs		<16.6	<23.3	<17.0	<19.0

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 46
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.39	<0.20	<0.26	<0.28
12378-pentachlorodibenzo-p-dioxin	1.00000	1.62	2.07	1.60	1.76
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.73	<1.09	0.97	<0.93
123678-hexachlorodibenzo-p-dioxin	0.10000	1.77	2.56	1.93	2.09
123789-hexachlorodibenzo-p-dioxin	0.10000	1.16	1.45	<0.77	<1.13
1234678-heptachlorodibenzo-p-dioxin	0.01000	2.77	4.03	2.74	3.18
Octachlorodibenzo-p-dioxin	0.00030	0.087	0.12	0.084	0.095
2378-tetrachlorodibenzofuran	0.10000	0.11	<0.057	<0.048	<0.070
12378-pentachlorodibenzofuran	0.03000	0.060	<0.049	<0.031	<0.046
23478-pentachlorodibenzofuran	0.30000	<0.82	1.28	<1.03	<1.04
123478-hexachlorodibenzofuran	0.10000	<0.63	1.02	0.68	<0.78
123678-hexachlorodibenzofuran	0.10000	<0.53	<0.85	<0.60	<0.66
234678-hexachlorodibenzofuran	0.10000	1.22	1.68	1.26	1.39
123789-hexachlorodibenzofuran	0.10000	0.39	<0.51	<0.058	<0.32
1234678-heptachlorodibenzofuran	0.01000	0.63	0.90	0.66	0.73
1234789-heptachlorodibenzofuran	0.01000	0.098	0.12	<0.063	<0.095
Octachlorodibenzofuran	0.00030	0.011	0.016	0.011	0.013
PCB 81	0.00030	<0.00082	<0.0010	<0.00077	<0.00087
PCB 77	0.00010	0.0029	0.0086	0.0025	0.0047
PCB 123	0.00003	0.00022	<0.00028	0.00042	<0.00031
PCB 118	0.00003	0.012	0.020	0.018	0.017
PCB 114	0.00003	<0.00025	0.00053	<0.00046	<0.00041
PCB 105	0.00003	0.0037	0.0050	0.0054	0.0047
PCB 126	0.10000	<0.20	<0.52	<0.50	<0.41
PCB 167	0.00003	<0.00014	<0.00013	<0.00014	<0.00014
PCB 156/157	0.00003	0.00046	<0.00035	0.00040	<0.00040
PCB 169	0.03000	<0.040	<0.054	<0.062	<0.052
PCB 189	0.00003	<0.00010	0.00013	<0.000062	<0.000098
Total Dioxins & Furans Only		<13.0	<18.0	<12.8	<14.6
Total PCBs Only		<0.26	<0.61	<0.59	<0.49
Total Dioxins & Furans and PCBs		<13.3	<18.6	<13.4	<15.1

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 46A
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using Half the Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.00000	0.20	0.098	0.13	0.14
12378-pentachlorodibenzo-p-dioxin	1.00000	1.62	2.07	1.60	1.76
123478-hexachlorodibenzo-p-dioxin	0.10000	0.37	0.55	0.97	0.63
123678-hexachlorodibenzo-p-dioxin	0.10000	1.77	2.56	1.93	2.09
123789-hexachlorodibenzo-p-dioxin	0.10000	1.16	1.45	0.38	1.00
1234678-heptachlorodibenzo-p-dioxin	0.01000	2.77	4.03	2.74	3.18
Octachlorodibenzo-p-dioxin	0.00030	0.087	0.12	0.084	0.095
2378-tetrachlorodibenzofuran	0.10000	0.11	0.029	0.024	0.053
12378-pentachlorodibenzofuran	0.03000	0.060	0.024	0.015	0.033
23478-pentachlorodibenzofuran	0.30000	0.41	1.28	0.51	0.73
123478-hexachlorodibenzofuran	0.10000	0.31	1.02	0.68	0.67
123678-hexachlorodibenzofuran	0.10000	0.26	0.42	0.30	0.33
234678-hexachlorodibenzofuran	0.10000	1.22	1.68	1.26	1.39
123789-hexachlorodibenzofuran	0.10000	0.39	0.25	0.029	0.23
1234678-heptachlorodibenzofuran	0.01000	0.63	0.90	0.66	0.73
1234789-heptachlorodibenzofuran	0.01000	0.098	0.12	0.032	0.085
Octachlorodibenzofuran	0.00030	0.011	0.016	0.011	0.013
PCB 81	0.00030	0.00041	0.00051	0.00038	0.00044
PCB 77	0.00010	0.0029	0.0086	0.0025	0.0047
PCB 123	0.00003	0.00022	0.00014	0.00042	0.00026
PCB 118	0.00003	0.012	0.020	0.018	0.017
PCB 114	0.00003	0.00013	0.00053	0.00023	0.00029
PCB 105	0.00003	0.0037	0.0050	0.0054	0.0047
PCB 126	0.10000	0.10	0.26	0.25	0.20
PCB 167	0.00003	0.000071	0.000064	0.000072	0.000069
PCB 156/157	0.00003	0.00046	0.00018	0.00040	0.00035
PCB 169	0.03000	0.020	0.027	0.031	0.026
PCB 189	0.00003	0.000051	0.00013	0.000031	0.000071
Total Dioxins & Furans Only		11.5	16.6	11.4	13.2
Total PCBs Only		0.14	0.32	0.31	0.26
Total Dioxins & Furans and PCBs		11.6	16.9	11.7	13.4

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 46B
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.39	<0.20	<0.26	<0.28
12378-pentachlorodibenzo-p-dioxin	0.500	0.81	1.04	0.80	0.88
123478-hexachlorodibenzo-p-dioxin	0.100	<0.73	<1.09	0.97	<0.93
123678-hexachlorodibenzo-p-dioxin	0.100	1.77	2.56	1.93	2.09
123789-hexachlorodibenzo-p-dioxin	0.100	1.16	1.45	<0.77	<1.13
1234678-heptachlorodibenzo-p-dioxin	0.010	2.77	4.03	2.74	3.18
Octachlorodibenzo-p-dioxin	0.001	0.29	0.38	0.28	0.32
2378-tetrachlorodibenzofuran	0.100	0.11	<0.057	<0.048	<0.070
12378-pentachlorodibenzofuran	0.050	0.10	<0.082	<0.051	<0.077
23478-pentachlorodibenzofuran	0.500	<1.36	2.13	<1.71	<1.73
123478-hexachlorodibenzofuran	0.100	<0.63	1.02	0.68	<0.78
123678-hexachlorodibenzofuran	0.100	<0.53	<0.85	<0.60	<0.66
234678-hexachlorodibenzofuran	0.100	1.22	1.68	1.26	1.39
123789-hexachlorodibenzofuran	0.100	0.39	<0.51	<0.058	<0.32
1234678-heptachlorodibenzofuran	0.010	0.63	0.90	0.66	0.73
1234789-heptachlorodibenzofuran	0.010	0.098	0.12	<0.063	<0.095
Octachlorodibenzofuran	0.001	0.037	0.054	0.037	0.043
Total Dioxins & Furans		<13.0	<18.1	<12.9	<14.7
In-Stack Emission Limit					60

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

NATO/CCMS (1989) Toxicity Equivalency Factors

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 47
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Wet Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Wet Reference Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.41	<0.21	<0.27	<0.30
12378-pentachlorodibenzo-p-dioxin	1.00000	1.70	2.17	1.71	1.86
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.77	<1.15	1.04	<0.99
123678-hexachlorodibenzo-p-dioxin	0.10000	1.86	2.69	2.06	2.20
123789-hexachlorodibenzo-p-dioxin	0.10000	1.22	1.52	<0.82	<1.19
1234678-heptachlorodibenzo-p-dioxin	0.01000	2.92	4.23	2.92	3.36
Octachlorodibenzo-p-dioxin	0.00030	0.091	0.12	0.089	0.10
2378-tetrachlorodibenzofuran	0.10000	0.11	<0.060	<0.051	<0.074
12378-pentachlorodibenzofuran	0.03000	0.063	<0.051	<0.033	<0.049
23478-pentachlorodibenzofuran	0.30000	<0.86	1.34	<1.10	<1.10
123478-hexachlorodibenzofuran	0.10000	<0.66	1.07	0.73	<0.82
123678-hexachlorodibenzofuran	0.10000	<0.55	<0.89	<0.64	<0.69
234678-hexachlorodibenzofuran	0.10000	1.29	1.76	1.34	1.46
123789-hexachlorodibenzofuran	0.10000	0.42	<0.53	<0.062	<0.34
1234678-heptachlorodibenzofuran	0.01000	0.67	0.94	0.71	0.77
1234789-heptachlorodibenzofuran	0.01000	0.10	0.13	<0.068	<0.10
Octachlorodibenzofuran	0.00030	0.012	0.017	0.012	0.013
PCB 81	0.00030	<0.00086	<0.0011	<0.00082	<0.00092
PCB 77	0.00010	0.0030	0.0091	0.0026	0.0049
PCB 123	0.00003	0.00023	<0.00030	0.00045	<0.00033
PCB 118	0.00003	0.012	0.021	0.019	0.018
PCB 114	0.00003	<0.00026	0.00055	<0.00049	<0.00044
PCB 105	0.00003	0.0038	0.0052	0.0058	0.0049
PCB 126	0.10000	<0.21	<0.55	<0.53	<0.43
PCB 167	0.00003	<0.00015	<0.00013	<0.00015	<0.00015
PCB 156/157	0.00003	0.00048	<0.00037	0.00043	<0.00043
PCB 169	0.03000	<0.042	<0.056	<0.066	<0.055
PCB 189	0.00003	<0.00011	0.00014	<0.000066	<0.00010
Total Dioxins & Furans Only		<13.7	<18.9	<13.7	<15.4
Total PCBs Only		<0.28	<0.64	<0.63	<0.52
Total Dioxins & Furans and PCBs		<14.0	<19.5	<14.3	<15.9

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 48
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Emission Rates

Specific Isomer	Toxicity Equivalency Factor	Emission Rate Test No. 1 ng TEQ/s	Test No. 2 ng TEQ/s	Test No. 3 ng TEQ/s	Average ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.0073	<0.0039	<0.0050	<0.0054
12378-pentachlorodibenzo-p-dioxin	1.00000	0.030	0.041	0.031	0.034
123478-hexachlorodibenzo-p-dioxin	0.10000	<0.014	<0.022	0.019	<0.018
123678-hexachlorodibenzo-p-dioxin	0.10000	0.033	0.051	0.038	0.041
123789-hexachlorodibenzo-p-dioxin	0.10000	0.022	0.029	<0.015	<0.022
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.052	0.080	0.054	0.062
Octachlorodibenzo-p-dioxin	0.00030	0.0016	0.0023	0.0016	0.0018
2378-tetrachlorodibenzofuran	0.10000	0.0020	<0.0011	<0.00094	<0.0014
12378-pentachlorodibenzofuran	0.03000	0.0011	<0.00097	<0.00060	<0.00090
23478-pentachlorodibenzofuran	0.30000	<0.015	0.025	<0.020	<0.020
123478-hexachlorodibenzofuran	0.10000	<0.012	0.020	0.013	<0.015
123678-hexachlorodibenzofuran	0.10000	<0.0099	<0.017	<0.012	<0.013
234678-hexachlorodibenzofuran	0.10000	0.023	0.033	0.025	0.027
123789-hexachlorodibenzofuran	0.10000	0.0074	<0.010	<0.0011	<0.0062
1234678-heptachlorodibenzofuran	0.01000	0.012	0.018	0.013	0.014
1234789-heptachlorodibenzofuran	0.01000	0.0018	0.0024	<0.0012	<0.0018
Octachlorodibenzofuran	0.00030	0.00021	0.00032	0.00022	0.00025
PCB 81	0.00030	<0.000015	<0.000020	<0.000015	<0.000017
PCB 77	0.00010	0.000054	0.00017	0.000048	0.000091
PCB 123	0.00003	0.0000041	<0.0000056	0.0000082	<0.0000060
PCB 118	0.00003	0.00022	0.00040	0.00035	0.00032
PCB 114	0.00003	<0.0000047	0.000010	<0.0000089	<0.0000080
PCB 105	0.00003	0.000068	0.000099	0.00011	0.000091
PCB 126	0.10000	<0.0038	<0.010	<0.0097	<0.0080
PCB 167	0.00003	<0.0000027	<0.0000025	<0.0000028	<0.0000027
PCB 156/157	0.00003	0.0000086	<0.0000070	0.0000079	<0.0000078
PCB 169	0.03000	<0.00076	<0.0011	<0.0012	<0.0010
PCB 189	0.00003	<0.0000019	0.0000026	<0.0000012	<0.0000019
Total Dioxins & Furans Only		<0.24	<0.36	<0.25	<0.28
Total PCBs Only		<0.0050	<0.012	<0.011	<0.0095
Total Dioxins & Furans and PCBs		<0.25	<0.37	<0.26	<0.29

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 49
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using the Full Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	<0.21	<0.35	<0.28	<0.30	<0.0054
12378-pentachlorodibenzo-p-dioxin	1.29	2.21	1.76	1.86	0.034
123478-hexachlorodibenzo-p-dioxin	<0.68	<1.17	<0.93	<0.99	<0.018
123678-hexachlorodibenzo-p-dioxin	1.52	2.62	2.09	2.20	0.041
123789-hexachlorodibenzo-p-dioxin	<0.82	<1.41	<1.13	<1.19	<0.022
1234678-heptachlorodibenzo-p-dioxin	2.32	3.99	3.18	3.36	0.062
Octachlorodibenzo-p-dioxin	0.070	0.12	0.095	0.10	0.0018
2378-tetrachlorodibenzofuran	<0.052	<0.088	<0.070	<0.074	<0.0014
12378-pentachlorodibenzofuran	<0.034	<0.058	<0.046	<0.049	<0.00090
23478-pentachlorodibenzofuran	<0.76	<1.31	<1.04	<1.10	<0.020
123478-hexachlorodibenzofuran	<0.57	<0.98	<0.78	<0.82	<0.015
123678-hexachlorodibenzofuran	<0.48	<0.83	<0.66	<0.69	<0.013
234678-hexachlorodibenzofuran	1.01	1.74	1.39	1.46	0.027
123789-hexachlorodibenzofuran	<0.23	<0.40	<0.32	<0.34	<0.0062
1234678-heptachlorodibenzofuran	0.53	0.92	0.73	0.77	0.014
1234789-heptachlorodibenzofuran	<0.069	<0.12	<0.095	<0.10	<0.0018
Octachlorodibenzofuran	0.0093	0.016	0.013	0.013	0.00025
PCB 81	<0.00064	<0.0011	<0.00087	<0.00092	<0.000017
PCB 77	0.0034	0.0059	0.0047	0.0049	0.000091
PCB 123	<0.00022	<0.00039	<0.00031	<0.00033	<0.0000060
PCB 118	0.012	0.021	0.017	0.018	0.00032
PCB 114	<0.00030	<0.00052	<0.00041	<0.00044	<0.0000080
PCB 105	0.0034	0.0059	0.0047	0.0049	0.000091
PCB 126	<0.30	<0.51	<0.41	<0.43	<0.0080
PCB 167	<0.00010	<0.00017	<0.00014	<0.00015	<0.0000027
PCB 156/157	<0.00030	<0.00051	<0.00040	<0.00043	<0.0000078
PCB 169	<0.038	<0.065	<0.052	<0.055	<0.0010
PCB 189	<0.000072	<0.00012	<0.000098	<0.00010	<0.0000019
Total Dioxins & Furans Only	<10.7	<18.3	<14.6	<15.4	<0.28
Total PCBs Only	<0.36	<0.61	<0.49	<0.52	<0.0095
Total Dioxins & Furans and PCBs	<11.0	<19.0	<15.1	<15.9	<0.29

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 50
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using Half the Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	0.10	0.18	0.14	0.15	0.0027
12378-pentachlorodibenzo-p-dioxin	1.29	2.21	1.76	1.86	0.034
123478-hexachlorodibenzo-p-dioxin	0.46	0.79	0.63	0.67	0.012
123678-hexachlorodibenzo-p-dioxin	1.52	2.62	2.09	2.20	0.041
123789-hexachlorodibenzo-p-dioxin	0.73	1.25	1.00	1.05	0.019
1234678-heptachlorodibenzo-p-dioxin	2.32	3.99	3.18	3.36	0.062
Octachlorodibenzo-p-dioxin	0.070	0.12	0.095	0.10	0.0018
2378-tetrachlorodibenzofuran	0.039	0.066	0.053	0.056	0.0010
12378-pentachlorodibenzofuran	0.024	0.042	0.033	0.035	0.00063
23478-pentachlorodibenzofuran	0.53	0.92	0.73	0.77	0.014
123478-hexachlorodibenzofuran	0.49	0.85	0.67	0.71	0.013
123678-hexachlorodibenzofuran	0.24	0.41	0.33	0.35	0.0064
234678-hexachlorodibenzofuran	1.01	1.74	1.39	1.46	0.027
123789-hexachlorodibenzofuran	0.17	0.28	0.23	0.24	0.0043
1234678-heptachlorodibenzofuran	0.53	0.92	0.73	0.77	0.014
1234789-heptachlorodibenzofuran	0.062	0.11	0.085	0.089	0.0016
Octachlorodibenzofuran	0.0093	0.016	0.013	0.013	0.00025
PCB 81	0.00032	0.00055	0.00044	0.00046	0.0000084
PCB 77	0.0034	0.0059	0.0047	0.0049	0.000091
PCB 123	0.00019	0.00033	0.00026	0.00028	0.0000050
PCB 118	0.012	0.021	0.017	0.018	0.00032
PCB 114	0.00021	0.00037	0.00029	0.00031	0.0000058
PCB 105	0.0034	0.0059	0.0047	0.0049	0.000091
PCB 126	0.15	0.26	0.20	0.22	0.0040
PCB 167	0.000050	0.000087	0.000069	0.000073	0.0000013
PCB 156/157	0.00025	0.00043	0.00035	0.00037	0.0000067
PCB 169	0.019	0.033	0.026	0.027	0.00050
PCB 189	0.000052	0.000089	0.000071	0.000075	0.0000014
Total Dioxins & Furans Only	9.61	16.5	13.2	13.9	0.26
Total PCBs Only	0.19	0.32	0.26	0.27	0.0050
Total Dioxins & Furans and PCBs	9.79	16.8	13.4	14.2	0.26

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 51
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Emission Data for Chlorobenzenes
Test No. 1

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	1070	134	227	182	192	3.41
1,3-Dichlorobenzene	105	13.2	22.3	17.9	18.8	0.33
1,4-Dichlorobenzene	79.0	9.91	16.7	13.4	14.1	0.25
1,2-Dichlorobenzene	85.0	10.7	18.0	14.5	15.2	0.27
Total Dichlorobenzene	269	33.7	57.0	45.8	48.1	0.86
1,3,5-trichlorobenzene	12.7	1.59	2.69	2.16	2.27	0.040
1,2,4-trichlorobenzene	<12	<1.50	<2.54	<2.04	<2.15	<0.038
1,2,3-trichlorobenzene	<12	<1.50	<2.54	<2.04	<2.15	<0.038
Total Trichlorobenzene	<36.7	<4.60	<7.78	<6.24	<6.57	<0.12
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.50	<2.54	<2.04	<2.15	<0.038
1,2,3,4-tetrachlorobenzene	<12	<1.50	<2.54	<2.04	<2.15	<0.038
Total Tetrachlorobenzene	<24.0	<3.01	<5.09	<4.08	<4.30	<0.077
Pentachlorobenzene	<12	<1.50	<2.54	<2.04	<2.15	<0.038
Hexachlorobenzene	<12	<1.50	<2.54	<2.04	<2.15	<0.038
Total Chlorobenzenes	<1424	<179	<302	<242	<255	<4.54

Dry Gas Volume Sampled (Rm^3*) :	4.718
Actual Flowrate (m^3/s) :	25.4
Dry Reference Flowrate (Rm^3/s*) :	15.0
Dry Adjusted Flowrate (Rm^3/s**) :	18.7
Wet Reference Flowrate (Rm^3/s*) :	17.8

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 52
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Emission Data for Chlorobenzenes
Test No. 2

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	329	38.8	67.3	53.7	56.3	1.06
1,3-Dichlorobenzene	148	17.5	30.3	24.1	25.3	0.48
1,4-Dichlorobenzene	74.3	8.76	15.2	12.1	12.7	0.24
1,2-Dichlorobenzene	107	12.6	21.9	17.5	18.3	0.35
Total Dichlorobenzene	329	38.8	67.4	53.7	56.4	1.06
1,3,5-trichlorobenzene	<12	<1.42	<2.45	<1.96	<2.05	<0.039
1,2,4-trichlorobenzene	45.5	5.37	9.31	7.42	7.79	0.15
1,2,3-trichlorobenzene	18.1	2.13	3.70	2.95	3.10	0.058
Total Trichlorobenzene	<75.6	<8.92	<15.5	<12.3	<12.9	<0.24
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.42	<2.45	<1.96	<2.05	<0.039
1,2,3,4-tetrachlorobenzene	<12	<1.42	<2.45	<1.96	<2.05	<0.039
Total Tetrachlorobenzene	<24.0	<2.83	<4.91	<3.91	<4.11	<0.077
Pentachlorobenzene	<12	<1.42	<2.45	<1.96	<2.05	<0.039
Hexachlorobenzene	<12	<1.42	<2.45	<1.96	<2.05	<0.039
Total Chlorobenzenes	<782	<92.2	<160	<128	<134	<2.52

Dry Gas Volume Sampled (Rm^3*) :	4.889
Actual Flowrate (m^3/s) :	27.4
Dry Reference Flowrate (Rm^3/s*) :	15.8
Dry Adjusted Flowrate (Rm^3/s**) :	19.8
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 53
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Emission Data for Chlorobenzenes
Test No. 3

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	1180	148	256	202	215	3.95
1,3-Dichlorobenzene	124	15.6	26.9	21.2	22.6	0.41
1,4-Dichlorobenzene	80.3	10.1	17.4	13.7	14.7	0.27
1,2-Dichlorobenzene	93.1	11.7	20.2	15.9	17.0	0.31
Total Dichlorobenzene	297	37.3	64.6	50.8	54.3	0.99
1,3,5-trichlorobenzene	12.2	1.53	2.65	2.09	2.23	0.041
1,2,4-trichlorobenzene	36.7	4.60	7.97	6.27	6.70	0.12
1,2,3-trichlorobenzene	18.7	2.35	4.06	3.20	3.42	0.063
Total Trichlorobenzene	67.6	8.48	14.7	11.6	12.3	0.23
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.51	<2.61	<2.05	<2.19	<0.040
1,2,3,4-tetrachlorobenzene	<12	<1.51	<2.61	<2.05	<2.19	<0.040
Total Tetrachlorobenzene	<24.0	<3.01	<5.21	<4.10	<4.38	<0.080
Pentachlorobenzene	<12	<1.51	<2.61	<2.05	<2.19	<0.040
Hexachlorobenzene	<12	<1.51	<2.61	<2.05	<2.19	<0.040
Total Chlorobenzenes	<1593	<200	<346	<272	<291	<5.33

Dry Gas Volume Sampled (Rm^3*) :	4.606
Actual Flowrate (m^3/s) :	26.7
Dry Reference Flowrate (Rm^3/s*) :	15.4
Dry Adjusted Flowrate (Rm^3/s**) :	19.6
Wet Reference Flowrate (Rm^3/s*) :	18.3

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 54
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Actual Concentrations for Chlorobenzenes

Specific Isomer	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Monochlorobenzene	134	38.8	148	107	55.6
1,3-Dichlorobenzene	13.2	17.5	15.6	15.4	14.0
1,4-Dichlorobenzene	9.91	8.76	10.1	9.58	7.5
1,2-Dichlorobenzene	10.7	12.6	11.7	11.7	8.4
Total Dichlorobenzene	33.7	38.8	37.3	36.6	7.1
1,3,5-trichlorobenzene	1.59	<1.42	1.53	<1.51	6.0
1,2,4-trichlorobenzene	<1.50	5.37	4.60	<3.82	53.5
1,2,3-trichlorobenzene	<1.50	2.13	2.35	<2.00	21.9
Total Trichlorobenzene	<4.60	<8.92	8.48	<7.33	32.4
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.50	<1.42	<1.51	<1.48	3.5
1,2,3,4-tetrachlorobenzene	<1.50	<1.42	<1.51	<1.48	3.5
Total Tetrachlorobenzene	<3.01	<2.83	<3.01	<2.95	3.5
Pentachlorobenzene	<1.50	<1.42	<1.51	<1.48	3.5
Hexachlorobenzene	<1.50	<1.42	<1.51	<1.48	3.5
Total Chlorobenzenes	<179	<92.2	<200	<157	36.3

TABLE 55
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dry Reference Concentrations for Chlorobenzenes

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Monochlorobenzene	227	67.3	256	183	55.4
1,3-Dichlorobenzene	22.3	30.3	26.9	26.5	15.2
1,4-Dichlorobenzene	16.7	15.2	17.4	16.5	7.0
1,2-Dichlorobenzene	18.0	21.9	20.2	20.0	9.7
Total Dichlorobenzene	57.0	67.4	64.6	63.0	8.5
1,3,5-trichlorobenzene	2.69	<2.45	2.65	<2.60	4.9
1,2,4-trichlorobenzene	<2.54	9.31	7.97	<6.61	54.2
1,2,3-trichlorobenzene	<2.54	3.70	4.06	<3.44	23.1
Total Trichlorobenzene	<7.78	<15.5	14.7	<12.6	33.4
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<2.54	<2.45	<2.61	<2.53	3.0
1,2,3,4-tetrachlorobenzene	<2.54	<2.45	<2.61	<2.53	3.0
Total Tetrachlorobenzene	<5.09	<4.91	<5.21	<5.07	3.0
Pentachlorobenzene	<2.54	<2.45	<2.61	<2.53	3.0
Hexachlorobenzene	<2.54	<2.45	<2.61	<2.53	3.0
Total Chlorobenzenes	<302	<160	<346	<269	36.1

* At 25°C and 1 atmosphere

TABLE 56
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dry Adjusted Concentrations for Chlorobenzenes

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation %
	Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	
Monochlorobenzene	182	53.7	202	146	55.1
1,3-Dichlorobenzene	17.9	24.1	21.2	21.1	14.9
1,4-Dichlorobenzene	13.4	12.1	13.7	13.1	6.6
1,2-Dichlorobenzene	14.5	17.5	15.9	15.9	9.4
Total Dichlorobenzene	45.8	53.7	50.8	50.1	8.0
1,3,5-trichlorobenzene	2.16	<1.96	2.09	<2.07	5.0
1,2,4-trichlorobenzene	<2.04	7.42	6.27	<5.25	54.0
1,2,3-trichlorobenzene	<2.04	2.95	3.20	<2.73	22.3
Total Trichlorobenzene	<6.24	<12.3	11.6	<10.0	33.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<2.04	<1.96	<2.05	<2.02	2.6
1,2,3,4-tetrachlorobenzene	<2.04	<1.96	<2.05	<2.02	2.6
Total Tetrachlorobenzene	<4.08	<3.91	<4.10	<4.03	2.6
Pentachlorobenzene	<2.04	<1.96	<2.05	<2.02	2.6
Hexachlorobenzene	<2.04	<1.96	<2.05	<2.02	2.6
Total Chlorobenzenes	<242	<128	<272	<214	35.7

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 57
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Wet Reference Concentrations for Chlorobenzenes

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Monochlorobenzene	192	56.3	215	154	55.6
1,3-Dichlorobenzene	18.8	25.3	22.6	22.3	14.8
1,4-Dichlorobenzene	14.1	12.7	14.7	13.8	7.3
1,2-Dichlorobenzene	15.2	18.3	17.0	16.8	9.2
Total Dichlorobenzene	48.1	56.4	54.3	52.9	8.1
1,3,5-trichlorobenzene	2.27	<2.05	2.23	<2.18	5.3
1,2,4-trichlorobenzene	<2.15	7.79	6.70	<5.55	54.0
1,2,3-trichlorobenzene	<2.15	3.10	3.42	<2.89	22.8
Total Trichlorobenzene	<6.57	<12.9	12.3	<10.6	33.1
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<2.15	<2.05	<2.19	<2.13	3.3
1,2,3,4-tetrachlorobenzene	<2.15	<2.05	<2.19	<2.13	3.3
Total Tetrachlorobenzene	<4.30	<4.11	<4.38	<4.26	3.3
Pentachlorobenzene	<2.15	<2.05	<2.19	<2.13	3.3
Hexachlorobenzene	<2.15	<2.05	<2.19	<2.13	3.3
Total Chlorobenzenes	<255	<134	<291	<227	36.3

* At 25°C and 1 atmosphere

TABLE 58
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Emission Rates for Chlorobenzenes

Specific Isomer	Emission Rate Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
Monochlorobenzene	3.41	1.06	3.95	2.81	54.7
1,3-Dichlorobenzene	0.33	0.48	0.41	0.41	17.5
1,4-Dichlorobenzene	0.25	0.24	0.27	0.25	5.7
1,2-Dichlorobenzene	0.27	0.35	0.31	0.31	12.0
Total Dichlorobenzene	0.86	1.06	0.99	0.97	10.8
1,3,5-trichlorobenzene	0.040	<0.039	0.041	<0.040	2.8
1,2,4-trichlorobenzene	<0.038	0.15	0.12	<0.10	55.6
1,2,3-trichlorobenzene	<0.038	0.058	0.063	<0.053	24.5
Total Trichlorobenzene	<0.12	<0.24	0.23	<0.20	35.1
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<0.038	<0.039	<0.040	<0.039	2.5
1,2,3,4-tetrachlorobenzene	<0.038	<0.039	<0.040	<0.039	2.5
Total Tetrachlorobenzene	<0.077	<0.077	<0.080	<0.078	2.5
Pentachlorobenzene	<0.038	<0.039	<0.040	<0.039	2.5
Hexachlorobenzene	<0.038	<0.039	<0.040	<0.039	2.5
Total Chlorobenzenes	<4.54	<2.52	<5.33	<4.13	35.0

TABLE 59
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Emission Data for Chlorobenzenes

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	107	183	146	154	2.81
1,3-Dichlorobenzene	15.4	26.5	21.1	22.3	0.41
1,4-Dichlorobenzene	9.58	16.5	13.1	13.8	0.25
1,2-Dichlorobenzene	11.7	20.0	15.9	16.8	0.31
Total Dichlorobenzene	36.6	63.0	50.1	52.9	0.97
1,3,5-trichlorobenzene	<1.51	<2.60	<2.07	<2.18	<0.040
1,2,4-trichlorobenzene	<3.82	<6.61	<5.25	<5.55	<0.10
1,2,3-trichlorobenzene	<2.00	<3.44	<2.73	<2.89	<0.053
Total Trichlorobenzene	<7.33	<12.6	<10.0	<10.6	<0.20
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.48	<2.53	<2.02	<2.13	<0.039
1,2,3,4-tetrachlorobenzene	<1.48	<2.53	<2.02	<2.13	<0.039
Total Tetrachlorobenzene	<2.95	<5.07	<4.03	<4.26	<0.078
Pentachlorobenzene	<1.48	<2.53	<2.02	<2.13	<0.039
Hexachlorobenzene	<1.48	<2.53	<2.02	<2.13	<0.039
Total Chlorobenzenes	<157	<269	<214	<227	<4.13

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 60
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorobenzene Blank Analyses

Isomers and Congener Group Totals	Blank Train Total ng	Media Blank Total ng
Monochlorobenzene	<12	<12
1,3-Dichlorobenzene	<12	<12
1,4-Dichlorobenzene	<12	<12
1,2-Dichlorobenzene	<12	<12
Total Dichlorobenzene	<36.0	<36.0
1,3,5-trichlorobenzene	<12	<12
1,2,4-trichlorobenzene	<12	<12
1,2,3-trichlorobenzene	<12	<12
Total Trichlorobenzene	<36.0	<36.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<12
1,2,3,4-tetrachlorobenzene	<12	<12
Total Tetrachlorobenzene	<24.0	<24.0
Pentachlorobenzene	<12	<12
Hexachlorobenzene	<12	<12
Total Chlorobenzenes	<132	<132

"<" indicates that the amount detected is less than the detection limit. In these cases the value of the detection limit was used to calculate the total collected.

TABLE 61
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 1

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<120	<15.0	<25.4	<20.4	<21.5	<0.38
3-monochlorophenol	<120	<15.0	<25.4	<20.4	<21.5	<0.38
4-monochlorophenol	<120	<15.0	<25.4	<20.4	<21.5	<0.38
Total Monochlorophenols	<360	<45.1	<76.3	<61.2	<64.4	<1.15
2,6-dichlorophenol	<120	<15.0	<25.4	<20.4	<21.5	<0.38
2,4 & 2,5-dichlorophenol	<120	<15.0	<25.4	<20.4	<21.5	<0.38
3,5-dichlorophenol	<120	<15.0	<25.4	<20.4	<21.5	<0.38
2,3-dichlorophenol	<120	<15.0	<25.4	<20.4	<21.5	<0.38
3,4-dichlorophenol	<120	<15.0	<25.4	<20.4	<21.5	<0.38
Total Dichlorophenols	<600	<75.2	<127	<102	<107	<1.91
2,4,6-trichlorophenol	<120	<15.0	<25.4	<20.4	<21.5	<0.38
2,3,6-trichlorophenol	<120	<15.0	<25.4	<20.4	<21.5	<0.38
2,3,5-trichlorophenol	<120	<15.0	<25.4	<20.4	<21.5	<0.38
2,4,5-trichlorophenol	<120	<15.0	<25.4	<20.4	<21.5	<0.38
2,3,4-trichlorophenol	<120	<15.0	<25.4	<20.4	<21.5	<0.38
3,4,5-trichlorophenol	<120	<15.0	<25.4	<20.4	<21.5	<0.38
Total Trichlorophenols	<720	<90.3	<153	<122	<129	<2.30
2,3,5,6/2,3,4,6-tetrachlorophenol	<120	<15.0	<25.4	<20.4	<21.5	<0.38
2,3,4,5-tetrachlorophenol	<120	<15.0	<25.4	<20.4	<21.5	<0.38
Total Tetrachlorophenols	<240	<30.1	<50.9	<40.8	<43.0	<0.77
Pentachlorophenol	<120	<15.0	<25.4	<20.4	<21.5	<0.38
Total Chlorophenols	<2040	<256	<432	<347	<365	<6.50

Dry Gas Volume Sampled (Rm^3*) :	4.718
Actual Flowrate (m^3/s) :	25.4
Dry Reference Flowrate (Rm^3/s*) :	15.0
Dry Adjusted Flowrate (Rm^3/s**) :	18.7
Wet Reference Flowrate (Rm^3/s*) :	17.8

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 62
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 2

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<120	<14.2	<24.5	<19.6	<20.5	<0.39
3-monochlorophenol	<120	<14.2	<24.5	<19.6	<20.5	<0.39
4-monochlorophenol	<120	<14.2	<24.5	<19.6	<20.5	<0.39
Total Monochlorophenols	<360	<42.5	<73.6	<58.7	<61.6	<1.16
2,6-dichlorophenol	<120	<14.2	<24.5	<19.6	<20.5	<0.39
2,4 & 2,5-dichlorophenol	<120	<14.2	<24.5	<19.6	<20.5	<0.39
3,5-dichlorophenol	<120	<14.2	<24.5	<19.6	<20.5	<0.39
2,3-dichlorophenol	<120	<14.2	<24.5	<19.6	<20.5	<0.39
3,4-dichlorophenol	<120	<14.2	<24.5	<19.6	<20.5	<0.39
Total Dichlorophenols	<600	<70.8	<123	<97.9	<103	<1.94
2,4,6-trichlorophenol	<120	<14.2	<24.5	<19.6	<20.5	<0.39
2,3,6-trichlorophenol	<120	<14.2	<24.5	<19.6	<20.5	<0.39
2,3,5-trichlorophenol	<120	<14.2	<24.5	<19.6	<20.5	<0.39
2,4,5-trichlorophenol	<120	<14.2	<24.5	<19.6	<20.5	<0.39
2,3,4-trichlorophenol	<120	<14.2	<24.5	<19.6	<20.5	<0.39
3,4,5-trichlorophenol	<120	<14.2	<24.5	<19.6	<20.5	<0.39
Total Trichlorophenols	<720	<84.9	<147	<117	<123	<2.32
2,3,5,6/2,3,4,6-tetrachlorophenol	<120	<14.2	<24.5	<19.6	<20.5	<0.39
2,3,4,5-tetrachlorophenol	<120	<14.2	<24.5	<19.6	<20.5	<0.39
Total Tetrachlorophenols	<240	<28.3	<49.1	<39.1	<41.1	<0.77
Pentachlorophenol	<120	<14.2	<24.5	<19.6	<20.5	<0.39
Total Chlorophenols	<2040	<241	<417	<333	<349	<6.58

Dry Gas Volume Sampled (Rm^3*) :	4.889
Actual Flowrate (m^3/s) :	27.4
Dry Reference Flowrate (Rm^3/s*) :	15.8
Dry Adjusted Flowrate (Rm^3/s**) :	19.8
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 63
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 3

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<120	<15.1	<26.1	<20.5	<21.9	<0.40
3-monochlorophenol	<120	<15.1	<26.1	<20.5	<21.9	<0.40
4-monochlorophenol	<120	<15.1	<26.1	<20.5	<21.9	<0.40
Total Monochlorophenols	<360	<45.2	<78.2	<61.5	<65.7	<1.20
2,6-dichlorophenol	<120	<15.1	<26.1	<20.5	<21.9	<0.40
2,4 & 2,5-dichlorophenol	<120	<15.1	<26.1	<20.5	<21.9	<0.40
3,5-dichlorophenol	<120	<15.1	<26.1	<20.5	<21.9	<0.40
2,3-dichlorophenol	<120	<15.1	<26.1	<20.5	<21.9	<0.40
3,4-dichlorophenol	<120	<15.1	<26.1	<20.5	<21.9	<0.40
Total Dichlorophenols	<600	<75.3	<130	<103	<110	<2.01
2,4,6-trichlorophenol	<120	<15.1	<26.1	<20.5	<21.9	<0.40
2,3,6-trichlorophenol	<120	<15.1	<26.1	<20.5	<21.9	<0.40
2,3,5-trichlorophenol	<120	<15.1	<26.1	<20.5	<21.9	<0.40
2,4,5-trichlorophenol	<120	<15.1	<26.1	<20.5	<21.9	<0.40
2,3,4-trichlorophenol	<120	<15.1	<26.1	<20.5	<21.9	<0.40
3,4,5-trichlorophenol	<120	<15.1	<26.1	<20.5	<21.9	<0.40
Total Trichlorophenols	<720	<90.3	<156	<123	<131	<2.41
2,3,5,6/2,3,4,6-tetrachlorophenol	<120	<15.1	<26.1	<20.5	<21.9	<0.40
2,3,4,5-tetrachlorophenol	<120	<15.1	<26.1	<20.5	<21.9	<0.40
Total Tetrachlorophenols	<240	<30.1	<52.1	<41.0	<43.8	<0.80
Pentachlorophenol	<120	<15.1	<26.1	<20.5	<21.9	<0.40
Total Chlorophenols	<2040	<256	<443	<349	<373	<6.83

Dry Gas Volume Sampled (Rm^3*) :	4.606
Actual Flowrate (m^3/s) :	26.7
Dry Reference Flowrate (Rm^3/s*) :	15.4
Dry Adjusted Flowrate (Rm^3/s**) :	19.6
Wet Reference Flowrate (Rm^3/s*) :	18.3

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 64
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Actual Concentrations

Specific Isomer	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
2-monochlorophenol	<15.0	<14.2	<15.1	<14.8	3.5
3-monochlorophenol	<15.0	<14.2	<15.1	<14.8	3.5
4-monochlorophenol	<15.0	<14.2	<15.1	<14.8	3.5
Total Monochlorophenols	<45.1	<42.5	<45.2	<44.3	3.5
2,6-dichlorophenol	<15.0	<14.2	<15.1	<14.8	3.5
2,4 & 2,5-dichlorophenol	<15.0	<14.2	<15.1	<14.8	3.5
3,5-dichlorophenol	<15.0	<14.2	<15.1	<14.8	3.5
2,3-dichlorophenol	<15.0	<14.2	<15.1	<14.8	3.5
3,4-dichlorophenol	<15.0	<14.2	<15.1	<14.8	3.5
Total Dichlorophenols	<75.2	<70.8	<75.3	<73.8	3.5
2,4,6-trichlorophenol	<15.0	<14.2	<15.1	<14.8	3.5
2,3,6-trichlorophenol	<15.0	<14.2	<15.1	<14.8	3.5
2,3,5-trichlorophenol	<15.0	<14.2	<15.1	<14.8	3.5
2,4,5-trichlorophenol	<15.0	<14.2	<15.1	<14.8	3.5
2,3,4-trichlorophenol	<15.0	<14.2	<15.1	<14.8	3.5
3,4,5-trichlorophenol	<15.0	<14.2	<15.1	<14.8	3.5
Total Trichlorophenols	<90.3	<84.9	<90.3	<88.5	3.5
2,3,5,6/2,3,4,6-tetrachlorophenol	<15.0	<14.2	<15.1	<14.8	3.5
2,3,4,5-tetrachlorophenol	<15.0	<14.2	<15.1	<14.8	3.5
Total Tetrachlorophenols	<30.1	<28.3	<30.1	<29.5	3.5
Pentachlorophenol	<15.0	<14.2	<15.1	<14.8	3.5
Total Chlorophenols	<256	<241	<256	<251	3.5

TABLE 65
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<25.4	<24.5	<26.1	<25.3	3.0
3-monochlorophenol	<25.4	<24.5	<26.1	<25.3	3.0
4-monochlorophenol	<25.4	<24.5	<26.1	<25.3	3.0
Total Monochlorophenols	<76.3	<73.6	<78.2	<76.0	3.0
2,6-dichlorophenol	<25.4	<24.5	<26.1	<25.3	3.0
2,4 & 2,5-dichlorophenol	<25.4	<24.5	<26.1	<25.3	3.0
3,5-dichlorophenol	<25.4	<24.5	<26.1	<25.3	3.0
2,3-dichlorophenol	<25.4	<24.5	<26.1	<25.3	3.0
3,4-dichlorophenol	<25.4	<24.5	<26.1	<25.3	3.0
Total Dichlorophenols	<127	<123	<130	<127	3.0
2,4,6-trichlorophenol	<25.4	<24.5	<26.1	<25.3	3.0
2,3,6-trichlorophenol	<25.4	<24.5	<26.1	<25.3	3.0
2,3,5-trichlorophenol	<25.4	<24.5	<26.1	<25.3	3.0
2,4,5-trichlorophenol	<25.4	<24.5	<26.1	<25.3	3.0
2,3,4-trichlorophenol	<25.4	<24.5	<26.1	<25.3	3.0
3,4,5-trichlorophenol	<25.4	<24.5	<26.1	<25.3	3.0
Total Trichlorophenols	<153	<147	<156	<152	3.0
2,3,5,6/2,3,4,6-tetrachlorophenol	<25.4	<24.5	<26.1	<25.3	3.0
2,3,4,5-tetrachlorophenol	<25.4	<24.5	<26.1	<25.3	3.0
Total Tetrachlorophenols	<50.9	<49.1	<52.1	<50.7	3.0
Pentachlorophenol	<25.4	<24.5	<26.1	<25.3	3.0
Total Chlorophenols	<432	<417	<443	<431	3.0

* At 25°C and 1 atmosphere

TABLE 66
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<20.4	<19.6	<20.5	<20.2	2.6
3-monochlorophenol	<20.4	<19.6	<20.5	<20.2	2.6
4-monochlorophenol	<20.4	<19.6	<20.5	<20.2	2.6
Total Monochlorophenols	<61.2	<58.7	<61.5	<60.5	2.6
2,6-dichlorophenol	<20.4	<19.6	<20.5	<20.2	2.6
2,4 & 2,5-dichlorophenol	<20.4	<19.6	<20.5	<20.2	2.6
3,5-dichlorophenol	<20.4	<19.6	<20.5	<20.2	2.6
2,3-dichlorophenol	<20.4	<19.6	<20.5	<20.2	2.6
3,4-dichlorophenol	<20.4	<19.6	<20.5	<20.2	2.6
Total Dichlorophenols	<102	<97.9	<103	<101	2.6
2,4,6-trichlorophenol	<20.4	<19.6	<20.5	<20.2	2.6
2,3,6-trichlorophenol	<20.4	<19.6	<20.5	<20.2	2.6
2,3,5-trichlorophenol	<20.4	<19.6	<20.5	<20.2	2.6
2,4,5-trichlorophenol	<20.4	<19.6	<20.5	<20.2	2.6
2,3,4-trichlorophenol	<20.4	<19.6	<20.5	<20.2	2.6
3,4,5-trichlorophenol	<20.4	<19.6	<20.5	<20.2	2.6
Total Trichlorophenols	<122	<117	<123	<121	2.6
2,3,5,6/2,3,4,6-tetrachlorophenol	<20.4	<19.6	<20.5	<20.2	2.6
2,3,4,5-tetrachlorophenol	<20.4	<19.6	<20.5	<20.2	2.6
Total Tetrachlorophenols	<40.8	<39.1	<41.0	<40.3	2.6
Pentachlorophenol	<20.4	<19.6	<20.5	<20.2	2.6
Total Chlorophenols	<347	<333	<349	<343	2.6

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 67
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<21.5	<20.5	<21.9	<21.3	3.3
3-monochlorophenol	<21.5	<20.5	<21.9	<21.3	3.3
4-monochlorophenol	<21.5	<20.5	<21.9	<21.3	3.3
Total Monochlorophenols	<64.4	<61.6	<65.7	<63.9	3.3
2,6-dichlorophenol	<21.5	<20.5	<21.9	<21.3	3.3
2,4 & 2,5-dichlorophenol	<21.5	<20.5	<21.9	<21.3	3.3
3,5-dichlorophenol	<21.5	<20.5	<21.9	<21.3	3.3
2,3-dichlorophenol	<21.5	<20.5	<21.9	<21.3	3.3
3,4-dichlorophenol	<21.5	<20.5	<21.9	<21.3	3.3
Total Dichlorophenols	<107	<103	<110	<107	3.3
2,4,6-trichlorophenol	<21.5	<20.5	<21.9	<21.3	3.3
2,3,6-trichlorophenol	<21.5	<20.5	<21.9	<21.3	3.3
2,3,5-trichlorophenol	<21.5	<20.5	<21.9	<21.3	3.3
2,4,5-trichlorophenol	<21.5	<20.5	<21.9	<21.3	3.3
2,3,4-trichlorophenol	<21.5	<20.5	<21.9	<21.3	3.3
3,4,5-trichlorophenol	<21.5	<20.5	<21.9	<21.3	3.3
Total Trichlorophenols	<129	<123	<131	<128	3.3
2,3,5,6/2,3,4,6-tetrachlorophenol	<21.5	<20.5	<21.9	<21.3	3.3
2,3,4,5-tetrachlorophenol	<21.5	<20.5	<21.9	<21.3	3.3
Total Tetrachlorophenols	<43.0	<41.1	<43.8	<42.6	3.3
Pentachlorophenol	<21.5	<20.5	<21.9	<21.3	3.3
Total Chlorophenols	<365	<349	<373	<362	3.3

* At 25°C and 1 atmosphere

TABLE 68
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Emission Rates

Specific Isomer	Emission Rate				Coefficient of Variation
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	%
2-monochlorophenol	<0.38	<0.39	<0.40	<0.39	2.5
3-monochlorophenol	<0.38	<0.39	<0.40	<0.39	2.5
4-monochlorophenol	<0.38	<0.39	<0.40	<0.39	2.5
Total Monochlorophenols	<1.15	<1.16	<1.20	<1.17	2.5
2,6-dichlorophenol	<0.38	<0.39	<0.40	<0.39	2.5
2,4 & 2,5-dichlorophenol	<0.38	<0.39	<0.40	<0.39	2.5
3,5-dichlorophenol	<0.38	<0.39	<0.40	<0.39	2.5
2,3-dichlorophenol	<0.38	<0.39	<0.40	<0.39	2.5
3,4-dichlorophenol	<0.38	<0.39	<0.40	<0.39	2.5
Total Dichlorophenols	<1.91	<1.94	<2.01	<1.95	2.5
2,4,6-trichlorophenol	<0.38	<0.39	<0.40	<0.39	2.5
2,3,6-trichlorophenol	<0.38	<0.39	<0.40	<0.39	2.5
2,3,5-trichlorophenol	<0.38	<0.39	<0.40	<0.39	2.5
2,4,5-trichlorophenol	<0.38	<0.39	<0.40	<0.39	2.5
2,3,4-trichlorophenol	<0.38	<0.39	<0.40	<0.39	2.5
3,4,5-trichlorophenol	<0.38	<0.39	<0.40	<0.39	2.5
Total Trichlorophenols	<2.30	<2.32	<2.41	<2.34	2.5
2,3,5,6/2,3,4,6-tetrachlorophenol	<0.38	<0.39	<0.40	<0.39	2.5
2,3,4,5-tetrachlorophenol	<0.38	<0.39	<0.40	<0.39	2.5
Total Tetrachlorophenols	<0.77	<0.77	<0.80	<0.78	2.5
Pentachlorophenol	<0.38	<0.39	<0.40	<0.39	2.5
Total Chlorophenols	<6.50	<6.58	<6.83	<6.64	2.5

TABLE 69
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Emission Data for Chlorophenol Isomer and Congener Groups

Specific Isomer	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	<14.8	<25.3	<20.2	<21.3	<0.39
3-monochlorophenol	<14.8	<25.3	<20.2	<21.3	<0.39
4-monochlorophenol	<14.8	<25.3	<20.2	<21.3	<0.39
Total Monochlorophenols	<44.3	<76.0	<60.5	<63.9	<1.17
2,6-dichlorophenol	<14.8	<25.3	<20.2	<21.3	<0.39
2,4 & 2,5-dichlorophenol	<14.8	<25.3	<20.2	<21.3	<0.39
3,5-dichlorophenol	<14.8	<25.3	<20.2	<21.3	<0.39
2,3-dichlorophenol	<14.8	<25.3	<20.2	<21.3	<0.39
3,4-dichlorophenol	<14.8	<25.3	<20.2	<21.3	<0.39
Total Dichlorophenols	<73.8	<127	<101	<107	<1.95
2,4,6-trichlorophenol	<14.8	<25.3	<20.2	<21.3	<0.39
2,3,6-trichlorophenol	<14.8	<25.3	<20.2	<21.3	<0.39
2,3,5-trichlorophenol	<14.8	<25.3	<20.2	<21.3	<0.39
2,4,5-trichlorophenol	<14.8	<25.3	<20.2	<21.3	<0.39
2,3,4-trichlorophenol	<14.8	<25.3	<20.2	<21.3	<0.39
3,4,5-trichlorophenol	<14.8	<25.3	<20.2	<21.3	<0.39
Total Trichlorophenols	<88.5	<152	<121	<128	<2.34
2,3,5,6/2,3,4,6-tetrachlorophenol	<14.8	<25.3	<20.2	<21.3	<0.39
2,3,4,5-tetrachlorophenol	<14.8	<25.3	<20.2	<21.3	<0.39
Total Tetrachlorophenols	<29.5	<50.7	<40.3	<42.6	<0.78
Pentachlorophenol	<14.8	<25.3	<20.2	<21.3	<0.39
Total Chlorophenols	<251	<431	<343	<362	<6.64

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 70
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Blank Analyses

Congener Group	Media Blank Total ng	Blank Train Total ng
2-monochlorophenol	<120	<120
3-monochlorophenol	<120	<120
4-monochlorophenol	<120	<120
Total Monochlorophenols	<360	<360
2,6-dichlorophenol	<120	<120
2,4 & 2,5-dichlorophenol	<120	<120
3,5-dichlorophenol	<120	<120
2,3-dichlorophenol	<120	<120
3,4-dichlorophenol	<120	<120
Total Dichlorophenols	<600	<600
2,4,6-trichlorophenol	<120	<120
2,3,6-trichlorophenol	<120	<120
2,3,5-trichlorophenol	<120	<120
2,4,5-trichlorophenol	<120	<120
2,3,4-trichlorophenol	<120	<120
3,4,5-trichlorophenol	<120	<120
Total Trichlorophenols	<720	<720
2,3,5,6/2,3,4,6-tetrachlorophenol	<120	<120
2,3,4,5-tetrachlorophenol	<120	<120
Total Tetrachlorophenols	<240	<240
Pentachlorophenol	<120	<120
Total Chlorophenols	<2040	<2040

"<" indicates that the amount detected is less than the detection limit. In these cases the value of the detection limit was used to calculate the total collected.

TABLE 71
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 1

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	<12	<1.50	<2.54	<2.04	<2.15	<0.038
Acenaphthylene	48.5	6.08	10.3	8.25	8.68	0.15
Anthracene	77.5	9.72	16.4	13.2	13.9	0.25
Benzo(a)Anthracene	<12	<1.50	<2.54	<2.04	<2.15	<0.038
Benzo(b)Fluoranthene	22.0	2.76	4.66	3.74	3.94	0.070
Benzo(k)Fluoranthene	<12	<1.50	<2.54	<2.04	<2.15	<0.038
Benzo(a)fluorene	16.1	2.02	3.41	2.74	2.88	0.051
Benzo(b)fluorene	14.8	1.86	3.14	2.52	2.65	0.047
Benzo(g,h,i)Perylene	39.2	4.92	8.31	6.67	7.02	0.12
Benzo(a)Pyrene	<12	<1.50	<2.54	<2.04	<2.15	<0.038
Benzo(e)Pyrene	12.3	1.54	2.61	2.09	2.20	0.039
Biphenyl	121	15.2	25.6	20.6	21.7	0.39
2-Chloronaphthalene	<12	<1.50	<2.54	<2.04	<2.15	<0.038
Chrysene/Triphenylene	26.5	3.32	5.62	4.51	4.74	0.084
Coronene	<60	<7.52	<12.7	<10.2	<10.7	<0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.50	<2.54	<2.04	<2.15	<0.038
Dibenzo(a,e)pyrene	<60	<7.52	<12.7	<10.2	<10.7	<0.19
9,10-dimethylanthracene	<12	<1.50	<2.54	<2.04	<2.15	<0.038
7,12-Dimethylbenzo(a)anthracene	<12	<1.50	<2.54	<2.04	<2.15	<0.038
Fluoranthene	436	54.7	92.4	74.2	78.0	1.39
Fluorene	59.0	7.40	12.5	10.0	10.6	0.19
Indeno(1,2,3-cd)Pyrene	<12	<1.50	<2.54	<2.04	<2.15	<0.038
2-methylanthracene	55.5	6.96	11.8	9.44	9.93	0.18
3-Methylcholanthrene	<60	<7.52	<12.7	<10.2	<10.7	<0.19
1-Methylnaphthalene	93.5	11.7	19.8	15.9	16.7	0.30
2-Methylnaphthalene	222	27.8	47.1	37.8	39.7	0.71
1-Methylphenanthrene	83.3	10.4	17.7	14.2	14.9	0.27
9-Methylphenanthrene	29.3	3.67	6.21	4.98	5.24	0.093
Naphthalene	603	75.6	128	103	108	1.92
Perylene	<12	<1.50	<2.54	<2.04	<2.15	<0.038
Phenanthrene	692	86.8	147	118	124	2.21
Picene	<60	<7.52	<12.7	<10.2	<10.7	<0.19
Pyrene	454	56.9	96.2	77.2	81.3	1.45
Tetralin	269	33.7	57.0	45.8	48.1	0.86
m-terphenyl	16.8	2.11	3.56	2.86	3.01	0.054
o-Terphenyl	<12	<1.50	<2.54	<2.04	<2.15	<0.038
p-terphenyl	<12	<1.50	<2.54	<2.04	<2.15	<0.038
Total	<3775	<473	<800	<642	<676	<12.0

Dry Gas Volume Sampled (Rm³*) :	4.718
Actual Flowrate (m³/s) :	25.4
Dry Reference Flowrate (Rm³/s*) :	15.0
Dry Adjusted Flowrate (Rm³/s**) :	18.7
Wet Reference Flowrate (Rm³/s*) :	17.8

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 72
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 2

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	38.8	4.58	7.94	6.33	6.64	0.13
Acenaphthylene	<12	<1.42	<2.45	<1.96	<2.05	<0.039
Anthracene	<12	<1.42	<2.45	<1.96	<2.05	<0.039
Benzo(a)Anthracene	<12	<1.42	<2.45	<1.96	<2.05	<0.039
Benzo(b)Fluoranthene	14.5	1.71	2.97	2.36	2.48	0.047
Benzo(k)Fluoranthene	<12	<1.42	<2.45	<1.96	<2.05	<0.039
Benzo(a)fluorene	<12	<1.42	<2.45	<1.96	<2.05	<0.039
Benzo(b)fluorene	<12	<1.42	<2.45	<1.96	<2.05	<0.039
Benzo(g,h,i)Perylene	40.7	4.80	8.32	6.64	6.97	0.13
Benzo(a)Pyrene	<12	<1.42	<2.45	<1.96	<2.05	<0.039
Benzo(e)Pyrene	20.8	2.45	4.25	3.39	3.56	0.067
Biphenyl	95.3	11.2	19.5	15.5	16.3	0.31
2-Chloronaphthalene	<12	<1.42	<2.45	<1.96	<2.05	<0.039
Chrysene/Triphenylene	<12	<1.42	<2.45	<1.96	<2.05	<0.039
Coronene	<60	<7.08	<12.3	<9.79	<10.3	<0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.42	<2.45	<1.96	<2.05	<0.039
Dibenzo(a,e)pyrene	<60	<7.08	<12.3	<9.79	<10.3	<0.19
9,10-dimethylanthracene	213	25.1	43.6	34.7	36.5	0.69
7,12-Dimethylbenzo(a)anthracene	<12	<1.42	<2.45	<1.96	<2.05	<0.039
Fluoranthene	68.5	8.08	14.0	11.2	11.7	0.22
Fluorene	246	29.0	50.3	40.1	42.1	0.79
Indeno(1,2,3-cd)Pyrene	<12	<1.42	<2.45	<1.96	<2.05	<0.039
2-methylanthracene	58.2	6.86	11.9	9.49	9.96	0.19
3-Methylcholanthrene	136	16.0	27.8	22.2	23.3	0.44
1-Methylnaphthalene	36.7	4.33	7.51	5.99	6.28	0.12
2-Methylnaphthalene	68.2	8.04	13.9	11.1	11.7	0.22
1-Methylphenanthrene	75.6	8.92	15.5	12.3	12.9	0.24
9-Methylphenanthrene	40.4	4.76	8.26	6.59	6.91	0.13
Naphthalene	210	24.8	43.0	34.2	35.9	0.68
Perylene	<12	<1.42	<2.45	<1.96	<2.05	<0.039
Phenanthrene	238	28.1	48.7	38.8	40.7	0.77
Picene	<60	<7.08	<12.3	<9.79	<10.3	<0.19
Pyrene	138	16.3	28.2	22.5	23.6	0.45
Tetralin	74.0	8.73	15.1	12.1	12.7	0.24
m-terphenyl	<12	<1.42	<2.45	<1.96	<2.05	<0.039
o-Terphenyl	12.4	1.46	2.54	2.02	2.12	0.040
p-terphenyl	<12	<1.42	<2.45	<1.96	<2.05	<0.039
Total	<2185	<258	<447	<356	<374	<7.05

Dry Gas Volume Sampled (Rm³*) :	4.889
Actual Flowrate (m³/s) :	27.4
Dry Reference Flowrate (Rm³/s*) :	15.8
Dry Adjusted Flowrate (Rm³/s**) :	19.8
Wet Reference Flowrate (Rm³/s*) :	18.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 73
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 3

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	<12	<1.51	<2.61	<2.05	<2.19	<0.040
Acenaphthylene	179	22.5	38.9	30.6	32.7	0.60
Anthracene	15.0	1.88	3.26	2.56	2.74	0.050
Benzo(a)Anthracene	<12	<1.51	<2.61	<2.05	<2.19	<0.040
Benzo(b)Fluoranthene	16.1	2.02	3.50	2.75	2.94	0.054
Benzo(k)Fluoranthene	<12	<1.51	<2.61	<2.05	<2.19	<0.040
Benzo(a)fluorene	<12	<1.51	<2.61	<2.05	<2.19	<0.040
Benzo(b)fluorene	<12	<1.51	<2.61	<2.05	<2.19	<0.040
Benzo(g,h,i)Perylene	46.1	5.78	10.0	7.88	8.42	0.15
Benzo(a)Pyrene	<12	<1.51	<2.61	<2.05	<2.19	<0.040
Benzo(e)Pyrene	16.0	2.01	3.47	2.74	2.92	0.054
Biphenyl	121	15.2	26.3	20.7	22.1	0.40
2-Chloronaphthalene	<12	<1.51	<2.61	<2.05	<2.19	<0.040
Chrysene/Triphenylene	<12	<1.51	<2.61	<2.05	<2.19	<0.040
Coronene	<60	<7.53	<13.0	<10.3	<11.0	<0.20
Dibenzo(a,c/a,h)Anthracene	<12	<1.51	<2.61	<2.05	<2.19	<0.040
Dibenzo(a,e)pyrene	<60	<7.53	<13.0	<10.3	<11.0	<0.20
9,10-dimethylanthracene	19.8	2.48	4.30	3.38	3.62	0.066
7,12-Dimethylbenzo(a)anthracene	<12	<1.51	<2.61	<2.05	<2.19	<0.040
Fluoranthene	31.9	4.00	6.93	5.45	5.83	0.11
Fluorene	20.7	2.60	4.49	3.54	3.78	0.069
Indeno(1,2,3-cd)Pyrene	<12	<1.51	<2.61	<2.05	<2.19	<0.040
2-methylanthracene	32.3	4.05	7.01	5.52	5.90	0.11
3-Methylcholanthrene	<60	<7.53	<13.0	<10.3	<11.0	<0.20
1-Methylnaphthalene	257	32.2	55.8	43.9	46.9	0.86
2-Methylnaphthalene	475	59.6	103	81.2	86.7	1.59
1-Methylphenanthrene	47.9	6.01	10.4	8.19	8.75	0.16
9-Methylphenanthrene	18.2	2.28	3.95	3.11	3.32	0.061
Naphthalene	2460	309	534	421	449	8.23
Perylene	<12	<1.51	<2.61	<2.05	<2.19	<0.040
Phenanthrene	113	14.2	24.5	19.3	20.6	0.38
Picene	<60	<7.53	<13.0	<10.3	<11.0	<0.20
Pyrene	40.4	5.07	8.77	6.91	7.38	0.14
Tetralin	93.0	11.7	20.2	15.9	17.0	0.31
m-terphenyl	<12	<1.51	<2.61	<2.05	<2.19	<0.040
o-Terphenyl	<12	<1.51	<2.61	<2.05	<2.19	<0.040
p-terphenyl	<12	<1.51	<2.61	<2.05	<2.19	<0.040
Total	<4422	<555	<960	<756	<808	<14.8

Dry Gas Volume Sampled (Rm³*) :	4.606
Actual Flowrate (m³/s) :	26.7
Dry Reference Flowrate (Rm³/s*) :	15.4
Dry Adjusted Flowrate (Rm³/s**) :	19.6
Wet Reference Flowrate (Rm³/s*) :	18.3

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 74
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Actual Concentrations

Compound	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Acenaphthene	<1.50	4.58	<1.51	<2.53	70.1
Acenaphthylene	6.08	<1.42	22.5	<9.98	111
Anthracene	9.72	<1.42	1.88	<4.34	108
Benzo(a)Anthracene	<1.50	<1.42	<1.51	<1.48	3.5
Benzo(b)Fluoranthene	2.76	1.71	2.02	2.16	24.9
Benzo(k)Fluoranthene	<1.50	<1.42	<1.51	<1.48	3.5
Benzo(a)fluorene	2.02	<1.42	<1.51	<1.65	19.8
Benzo(b)fluorene	1.86	<1.42	<1.51	<1.59	14.6
Benzo(g,h,i)Perylene	4.92	4.80	5.78	5.17	10.4
Benzo(a)Pyrene	<1.50	<1.42	<1.51	<1.48	3.5
Benzo(e)Pyrene	1.54	2.45	2.01	2.00	22.8
Biphenyl	15.2	11.2	15.2	13.9	16.4
2-Chloronaphthalene	<1.50	<1.42	<1.51	<1.48	3.5
Chrysene/Triphenylene	3.32	<1.42	<1.51	<2.08	51.7
Coronene	<7.52	<7.08	<7.53	<7.38	3.5
Dibenzo(a,c/a,h)Anthracene	<1.50	<1.42	<1.51	<1.48	3.5
Dibenzo(a,e)pyrene	<7.52	<7.08	<7.53	<7.38	3.5
9,10-dimethylanthracene	<1.50	25.1	2.48	<9.70	138
7,12-Dimethylbenzo(a)anthracene	<1.50	<1.42	<1.51	<1.48	3.5
Fluoranthene	54.7	8.08	4.00	22.3	127
Fluorene	7.40	29.0	2.60	13.0	108
Indeno(1,2,3-cd)Pyrene	<1.50	<1.42	<1.51	<1.48	3.5
2-methylanthracene	6.96	6.86	4.05	5.96	27.7
3-Methylcholanthrene	<7.52	16.0	<7.53	<10.4	47.4
1-Methylnaphthalene	11.7	4.33	32.2	16.1	89.8
2-Methylnaphthalene	27.8	8.04	59.6	31.8	81.7
1-Methylphenanthrene	10.4	8.92	6.01	8.46	26.7
9-Methylphenanthrene	3.67	4.76	2.28	3.57	34.8
Naphthalene	75.6	24.8	309	136	111
Perylene	<1.50	<1.42	<1.51	<1.48	3.5
Phenanthrene	86.8	28.1	14.2	43.0	89.6
Picene	<7.52	<7.08	<7.53	<7.38	3.5
Pyrene	56.9	16.3	5.07	26.1	105
Tetralin	33.7	8.73	11.7	18.0	75.8
m-terphenyl	2.11	<1.42	<1.51	<1.68	22.4
o-Terphenyl	<1.50	1.46	<1.51	<1.49	1.7
p-terphenyl	<1.50	<1.42	<1.51	<1.48	3.5
Total	<473	<258	<555	<429	35.8

TABLE 75
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Reference Concentrations

Compound	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<2.54	7.94	<2.61	<4.36	71.0
Acenaphthylene	10.3	<2.45	38.9	<17.2	111
Anthracene	16.4	<2.45	3.26	<7.38	106
Benzo(a)Anthracene	<2.54	<2.45	<2.61	<2.53	3.0
Benzo(b)Fluoranthene	4.66	2.97	3.50	3.71	23.4
Benzo(k)Fluoranthene	<2.54	<2.45	<2.61	<2.53	3.0
Benzo(a)fluorene	3.41	<2.45	<2.61	<2.82	18.2
Benzo(b)fluorene	3.14	<2.45	<2.61	<2.73	13.1
Benzo(g,h,i)Perylene	8.31	8.32	10.0	8.88	11.0
Benzo(a)Pyrene	<2.54	<2.45	<2.61	<2.53	3.0
Benzo(e)Pyrene	2.61	4.25	3.47	3.45	23.9
Biphenyl	25.6	19.5	26.3	23.8	15.7
2-Chloronaphthalene	<2.54	<2.45	<2.61	<2.53	3.0
Chrysene/Triphenylene	5.62	<2.45	<2.61	<3.56	50.1
Coronene	<12.7	<12.3	<13.0	<12.7	3.0
Dibenzo(a,c/a,h)Anthracene	<2.54	<2.45	<2.61	<2.53	3.0
Dibenzo(a,e)pyrene	<12.7	<12.3	<13.0	<12.7	3.0
9,10-dimethylanthracene	<2.54	43.6	4.30	<16.8	138
7,12-Dimethylbenzo(a)anthracene	<2.54	<2.45	<2.61	<2.53	3.0
Fluoranthene	92.4	14.0	6.93	37.8	126
Fluorene	12.5	50.3	4.49	22.4	109
Indeno(1,2,3-cd)Pyrene	<2.54	<2.45	<2.61	<2.53	3.0
2-methylanthracene	11.8	11.9	7.01	10.2	27.2
3-Methylcholanthrene	<12.7	27.8	<13.0	<17.9	48.3
1-Methylnaphthalene	19.8	7.51	55.8	27.7	90.6
2-Methylnaphthalene	47.1	13.9	103	54.7	82.4
1-Methylphenanthrene	17.7	15.5	10.4	14.5	25.7
9-Methylphenanthrene	6.21	8.26	3.95	6.14	35.1
Naphthalene	128	43.0	534	235	112
Perylene	<2.54	<2.45	<2.61	<2.53	3.0
Phenanthrene	147	48.7	24.5	73.3	88.2
Picene	<12.7	<12.3	<13.0	<12.7	3.0
Pyrene	96.2	28.2	8.77	44.4	103
Tetralin	57.0	15.1	20.2	30.8	74.3
m-terphenyl	3.56	<2.45	<2.61	<2.87	20.9
o-Terphenyl	<2.54	2.54	<2.61	<2.56	1.5
p-terphenyl	<2.54	<2.45	<2.61	<2.53	3.0
Total	<800	<447	<960	<736	35.7

* At 25°C and 1 atmosphere

TABLE 76
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Adjusted Concentrations

Compound	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<2.04	6.33	<2.05	<3.47	71.2
Acenaphthylene	8.25	<1.96	30.6	<13.6	111
Anthracene	13.2	<1.96	2.56	<5.90	107
Benzo(a)Anthracene	<2.04	<1.96	<2.05	<2.02	2.6
Benzo(b)Fluoranthene	3.74	2.36	2.75	2.95	24.1
Benzo(k)Fluoranthene	<2.04	<1.96	<2.05	<2.02	2.6
Benzo(a)fluorene	2.74	<1.96	<2.05	<2.25	19.0
Benzo(b)fluorene	2.52	<1.96	<2.05	<2.18	13.8
Benzo(g,h,i)Perylene	6.67	6.64	7.88	7.06	10.0
Benzo(a)Pyrene	<2.04	<1.96	<2.05	<2.02	2.6
Benzo(e)Pyrene	2.09	3.39	2.74	2.74	23.7
Biphenyl	20.6	15.5	20.7	18.9	15.5
2-Chloronaphthalene	<2.04	<1.96	<2.05	<2.02	2.6
Chrysene/Triphenylene	4.51	<1.96	<2.05	<2.84	50.9
Coronene	<10.2	<9.79	<10.3	<10.1	2.6
Dibenzo(a,c/a,h)Anthracene	<2.04	<1.96	<2.05	<2.02	2.6
Dibenzo(a,e)pyrene	<10.2	<9.79	<10.3	<10.1	2.6
9,10-dimethylanthracene	<2.04	34.7	3.38	<13.4	138
7,12-Dimethylbenzo(a)anthracene	<2.04	<1.96	<2.05	<2.02	2.6
Fluoranthene	74.2	11.2	5.45	30.3	126
Fluorene	10.0	40.1	3.54	17.9	109
Indeno(1,2,3-cd)Pyrene	<2.04	<1.96	<2.05	<2.02	2.6
2-methylanthracene	9.44	9.49	5.52	8.15	27.9
3-Methylcholanthrene	<10.2	22.2	<10.3	<14.2	48.5
1-Methylnaphthalene	15.9	5.99	43.9	21.9	89.7
2-Methylnaphthalene	37.8	11.1	81.2	43.4	81.6
1-Methylphenanthrene	14.2	12.3	8.19	11.6	26.5
9-Methylphenanthrene	4.98	6.59	3.11	4.89	35.6
Naphthalene	103	34.2	421	186	111
Perylene	<2.04	<1.96	<2.05	<2.02	2.6
Phenanthrene	118	38.8	19.3	58.6	88.9
Picene	<10.2	<9.79	<10.3	<10.1	2.6
Pyrene	77.2	22.5	6.91	35.5	104
Tetralin	45.8	12.1	15.9	24.6	75.1
m-terphenyl	2.86	<1.96	<2.05	<2.29	21.6
o-Terphenyl	<2.04	2.02	<2.05	<2.04	0.7
p-terphenyl	<2.04	<1.96	<2.05	<2.02	2.6
Total	<642	<356	<756	<585	35.2

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 77
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Wet Reference Concentrations

Compound	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<2.15	6.64	<2.19	<3.66	70.5
Acenaphthylene	8.68	<2.05	32.7	<14.5	111
Anthracene	13.9	<2.05	2.74	<6.22	107
Benzo(a)Anthracene	<2.15	<2.05	<2.19	<2.13	3.3
Benzo(b)Fluoranthene	3.94	2.48	2.94	3.12	23.9
Benzo(k)Fluoranthene	<2.15	<2.05	<2.19	<2.13	3.3
Benzo(a)fluorene	2.88	<2.05	<2.19	<2.38	18.7
Benzo(b)fluorene	2.65	<2.05	<2.19	<2.30	13.6
Benzo(g,h,i)Perylene	7.02	6.97	8.42	7.47	11.0
Benzo(a)Pyrene	<2.15	<2.05	<2.19	<2.13	3.3
Benzo(e)Pyrene	2.20	3.56	2.92	2.89	23.5
Biphenyl	21.7	16.3	22.1	20.0	16.1
2-Chloronaphthalene	<2.15	<2.05	<2.19	<2.13	3.3
Chrysene/Triphenylene	4.74	<2.05	<2.19	<3.00	50.6
Coronene	<10.7	<10.3	<11.0	<10.7	3.3
Dibenzo(a,c/a,h)Anthracene	<2.15	<2.05	<2.19	<2.13	3.3
Dibenzo(a,e)pyrene	<10.7	<10.3	<11.0	<10.7	3.3
9,10-dimethylanthracene	<2.15	36.5	3.62	<14.1	138
7,12-Dimethylbenzo(a)anthracene	<2.15	<2.05	<2.19	<2.13	3.3
Fluoranthene	78.0	11.7	5.83	31.9	126
Fluorene	10.6	42.1	3.78	18.8	109
Indeno(1,2,3-cd)Pyrene	<2.15	<2.05	<2.19	<2.13	3.3
2-methylanthracene	9.93	9.96	5.90	8.60	27.2
3-Methylcholanthrene	<10.7	23.3	<11.0	<15.0	47.9
1-Methylnaphthalene	16.7	6.28	46.9	23.3	90.5
2-Methylnaphthalene	39.7	11.7	86.7	46.1	82.4
1-Methylphenanthrene	14.9	12.9	8.75	12.2	25.8
9-Methylphenanthrene	5.24	6.91	3.32	5.16	34.8
Naphthalene	108	35.9	449	198	112
Perylene	<2.15	<2.05	<2.19	<2.13	3.3
Phenanthrene	124	40.7	20.6	61.7	88.6
Picene	<10.7	<10.3	<11.0	<10.7	3.3
Pyrene	81.3	23.6	7.38	37.4	104
Tetralin	48.1	12.7	17.0	25.9	74.7
m-terphenyl	3.01	<2.05	<2.19	<2.42	21.3
o-Terphenyl	<2.15	2.12	<2.19	<2.15	1.6
p-terphenyl	<2.15	<2.05	<2.19	<2.13	3.3
Total	<676	<374	<808	<619	35.9

* At 25°C and 1 atmosphere

TABLE 78
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Rates

Compound	Emission Rate				Coefficient
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	of Variation %
Acenaphthene	<0.038	0.13	<0.040	<0.068	73.2
Acenaphthylene	0.15	<0.039	0.60	<0.26	112
Anthracene	0.25	<0.039	0.050	<0.11	105
Benzo(a)Anthracene	<0.038	<0.039	<0.040	<0.039	2.5
Benzo(b)Fluoranthene	0.070	0.047	0.054	0.057	21.0
Benzo(k)Fluoranthene	<0.038	<0.039	<0.040	<0.039	2.5
Benzo(a)fluorene	0.051	<0.039	<0.040	<0.043	15.9
Benzo(b)fluorene	0.047	<0.039	<0.040	<0.042	10.8
Benzo(g,h,i)Perylene	0.12	0.13	0.15	0.14	11.2
Benzo(a)Pyrene	<0.038	<0.039	<0.040	<0.039	2.5
Benzo(e)Pyrene	0.039	0.067	0.054	0.053	26.2
Biphenyl	0.39	0.31	0.40	0.37	14.1
2-Chloronaphthalene	<0.038	<0.039	<0.040	<0.039	2.5
Chrysene/Triphenylene	0.084	<0.039	<0.040	<0.054	47.8
Coronene	<0.19	<0.19	<0.20	<0.20	2.5
Dibenzo(a,c/a,h)Anthracene	<0.038	<0.039	<0.040	<0.039	2.5
Dibenzo(a,e)pyrene	<0.19	<0.19	<0.20	<0.20	2.5
9,10-dimethylanthracene	<0.038	0.69	0.066	<0.26	139
7,12-Dimethylbenzo(a)anthracene	<0.038	<0.039	<0.040	<0.039	2.5
Fluoranthene	1.39	0.22	0.11	0.57	124
Fluorene	0.19	0.79	0.069	0.35	111
Indeno(1,2,3-cd)Pyrene	<0.038	<0.039	<0.040	<0.039	2.5
2-methylanthracene	0.18	0.19	0.11	0.16	27.4
3-Methylcholanthrene	<0.19	0.44	<0.20	<0.28	50.7
1-Methylnaphthalene	0.30	0.12	0.86	0.43	90.9
2-Methylnaphthalene	0.71	0.22	1.59	0.84	82.7
1-Methylphenanthrene	0.27	0.24	0.16	0.22	24.9
9-Methylphenanthrene	0.093	0.13	0.061	0.095	36.6
Naphthalene	1.92	0.68	8.23	3.61	112
Perylene	<0.038	<0.039	<0.040	<0.039	2.5
Phenanthrene	2.21	0.77	0.38	1.12	86.2
Picene	<0.19	<0.19	<0.20	<0.20	2.5
Pyrene	1.45	0.45	0.14	0.68	101
Tetralin	0.86	0.24	0.31	0.47	72.1
m-terphenyl	0.054	<0.039	<0.040	<0.044	18.5
o-Terphenyl	<0.038	0.040	<0.040	<0.039	2.7
p-terphenyl	<0.038	<0.039	<0.040	<0.039	2.5
Total	<12.0	<7.05	<14.8	<11.3	34.7

TABLE 79
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Polycyclic Aromatic Hydrocarbon Emission Data

Compound	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	<2.53	<4.36	<3.47	<3.66	<0.068
Acenaphthylene	<9.98	<17.2	<13.6	<14.5	<0.26
Anthracene	<4.34	<7.38	<5.90	<6.22	<0.11
Benzo(a)Anthracene	<1.48	<2.53	<2.02	<2.13	<0.039
Benzo(b)Fluoranthene	2.16	3.71	2.95	3.12	0.057
Benzo(k)Fluoranthene	<1.48	<2.53	<2.02	<2.13	<0.039
Benzo(a)fluorene	<1.65	<2.82	<2.25	<2.38	<0.043
Benzo(b)fluorene	<1.59	<2.73	<2.18	<2.30	<0.042
Benzo(g,h,i)Perylene	5.17	8.88	7.06	7.47	0.14
Benzo(a)Pyrene	<1.48	<2.53	<2.02	<2.13	<0.039
Benzo(e)Pyrene	2.00	3.45	2.74	2.89	0.053
Biphenyl	13.9	23.8	18.9	20.0	0.37
2-Chloronaphthalene	<1.48	<2.53	<2.02	<2.13	<0.039
Chrysene/Triphenylene	<2.08	<3.56	<2.84	<3.00	<0.054
Coronene	<7.38	<12.7	<10.1	<10.7	<0.20
Dibenzo(a,c/a,h)Anthracene	<1.48	<2.53	<2.02	<2.13	<0.039
Dibenzo(a,e)pyrene	<7.38	<12.7	<10.1	<10.7	<0.20
9,10-dimethylanthracene	<9.70	<16.8	<13.4	<14.1	<0.26
7,12-Dimethylbenzo(a)anthracene	<1.48	<2.53	<2.02	<2.13	<0.039
Fluoranthene	22.3	37.8	30.3	31.9	0.57
Fluorene	13.0	22.4	17.9	18.8	0.35
Indeno(1,2,3-cd)Pyrene	<1.48	<2.53	<2.02	<2.13	<0.039
2-methylanthracene	5.96	10.2	8.15	8.60	0.16
3-Methylcholanthrene	<10.4	<17.9	<14.2	<15.0	<0.28
1-Methylnaphthalene	16.1	27.7	21.9	23.3	0.43
2-Methylnaphthalene	31.8	54.7	43.4	46.1	0.84
1-Methylphenanthrene	8.46	14.5	11.6	12.2	0.22
9-Methylphenanthrene	3.57	6.14	4.89	5.16	0.095
Naphthalene	136	235	186	198	3.61
Perylene	<1.48	<2.53	<2.02	<2.13	<0.039
Phenanthrene	43.0	73.3	58.6	61.7	1.12
Picene	<7.38	<12.7	<10.1	<10.7	<0.20
Pyrene	26.1	44.4	35.5	37.4	0.68
Tetralin	18.0	30.8	24.6	25.9	0.47
m-terphenyl	<1.68	<2.87	<2.29	<2.42	<0.044
o-Terphenyl	<1.49	<2.56	<2.04	<2.15	<0.039
p-terphenyl	<1.48	<2.53	<2.02	<2.13	<0.039
Total	<429	<736	<585	<619	<11.3

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 80
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Polycyclic Aromatic Hydrocarbon Analyses

Compound	Blank Train ng	Method Blank ng
Acenaphthene	<12	<12
Acenaphthylene	<12	<12
Anthracene	<12	<12
Benzo(a)Anthracene	<12	<12
Benzo(b)Fluoranthene	<12	<12
Benzo(k)Fluoranthene	<12	<12
Benzo(a)fluorene	<12	<12
Benzo(b)fluorene	<12	<12
Benzo(g,h,i)Perylene	<12	<12
Benzo(a)Pyrene	<12	<12
Benzo(e)Pyrene	<12	<12
Biphenyl	16.4	<12
2-Chloronaphthalene	<12	<12
Chrysene/Triphenylene	<12	<12
Coronene	<60	<60
Dibenzo(a,c/a,h)Anthracene	<12	<12
Dibenzo(a,e)pyrene	<60	<60
9,10-dimethylanthracene	<12	<12
7,12-Dimethylbenzo(a)anthracene	<12	<12
Fluoranthene	<12	<12
Fluorene	<12	<12
Indeno(1,2,3-cd)Pyrene	<12	<12
2-methylanthracene	<12	<12
3-Methylcholanthrene	<60	<60
1-Methylnaphthalene	<12	<12
2-Methylnaphthalene	<12	<12
1-Methylphenanthrene	23.3	<12
9-Methylphenanthrene	<12	<12
Naphthalene	110	42.5
Perylene	<12	<12
Phenanthrene	<12	<12
Picene	<60	<60
Pyrene	<12	<12
Tetralin	92.0	<12
m-terphenyl	<12	<12
o-Terphenyl	<12	<12
p-terphenyl	<12	<12
Total	<830	<667

"<" indicates that the amount detected is less than the detection limit. In these cases the value of the detection limit was used to calculate the total collected.

TABLE 81
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Acetaldehyde, Formaldehyde and Acrolein Emission Data

Acetaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Acetaldehyde Concentration Actual µg/m^3	Dry Reference µg/Rm^3*	Dry Adjusted µg/Rm^3**	Wet Reference µg/Rm^3*	Acetaldehyde Emission Rate mg/s
1	3.05	0.0331	53.7	92.0	73.6	77.4	1.42
2	2.48	0.0315	46.0	78.8	63.1	66.2	1.21
3	2.83	0.0313	52.8	90.4	72.3	76.0	1.39
Average			50.8	87.1	69.7	73.2	1.34
Blank	3.25						

Formaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Formaldehyde Concentration Actual µg/m^3	Dry Reference µg/Rm^3*	Dry Adjusted µg/Rm^3**	Wet Reference µg/Rm^3*	Formaldehyde Emission Rate mg/s
1	0.82	0.0331	14.4	24.7	19.8	20.8	0.38
2	1.05	0.0315	19.5	33.4	26.7	28.0	0.51
3	1.19	0.0313	22.2	38.0	30.4	32.0	0.59
Average			18.7	32.0	25.6	26.9	0.49
Blank	0.88						

Acrolein

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Acrolein Concentration Actual µg/m^3	Dry Reference µg/Rm^3*	Dry Adjusted µg/Rm^3**	Wet Reference µg/Rm^3*	Acrolein Emission Rate mg/s
1	<0.1	0.0331	<1.76	<3.02	<2.41	<2.54	<0.047
2	<0.1	0.0315	<1.86	<3.18	<2.54	<2.67	<0.049
3	<0.1	0.0313	<1.87	<3.19	<2.56	<2.69	<0.049
Average			<1.83	<3.13	<2.50	<2.63	<0.048
Blank	<0.1						

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

Sampling was conducted at a single point. Volumetric flowrates from corresponding isokinetic tests were used to calculate emission data.

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 82
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Emission Data
Test No. 1

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m^3	µg/Rm^3*	µg/Rm^3**	µg/Rm^3*	mg/s
Acetone	0.12	3.45	5.84	4.69	4.92	0.088
Benzene	0.15	4.26	7.21	5.79	6.08	0.11
Bromodichloromethane	<0.01	<0.29	<0.49	<0.39	<0.41	<0.0074
Bromoform	<0.01	<0.29	<0.49	<0.39	<0.41	<0.0074
Bromomethane	<0.09	<2.61	<4.42	<3.54	<3.72	<0.066
1,3-Butadiene	<0.02	<0.58	<0.98	<0.79	<0.83	<0.015
2-Butanone	0.027	0.78	1.33	1.06	1.12	0.020
Carbon Tetrachloride	<0.01	<0.29	<0.49	<0.39	<0.41	<0.0074
Chloroform	0.029	0.84	1.42	1.14	1.20	0.021
Cumene (Isopropylbenzene)	<0.02	<0.58	<0.98	<0.79	<0.83	<0.015
Dibromochloromethane	<0.01	<0.29	<0.49	<0.39	<0.41	<0.0074
Dichlorodifluoromethane	<0.02	<0.58	<0.98	<0.79	<0.83	<0.015
1,2-Dichloroethane	<0.01	<0.29	<0.49	<0.39	<0.41	<0.0074
trans,1,2-Dichloroethene	<0.01	<0.29	<0.49	<0.39	<0.41	<0.0074
1,1-Dichloroethene	<0.01	<0.29	<0.49	<0.39	<0.41	<0.0074
1,2-Dichloropropane	<0.01	<0.29	<0.49	<0.39	<0.41	<0.0074
Ethylbenzene	<0.01	<0.29	<0.49	<0.39	<0.41	<0.0074
Ethylene Dibromide	<0.02	<0.58	<0.98	<0.79	<0.83	<0.015
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.58	<0.98	<0.79	<0.83	<0.015
Methylene Chloride	0.15	4.23	7.17	5.75	6.04	0.11
Styrene	<0.02	<0.58	<0.98	<0.79	<0.83	<0.015
Tetrachloroethene	0.011	0.32	0.54	0.43	0.45	0.0081
Toluene	2.00	57.8	97.9	78.5	82.5	1.47
1,1,1-Trichloroethane	<0.01	<0.29	<0.49	<0.39	<0.41	<0.0074
Trichloroethene/1,1,2-Trichloroethene	<0.02	<0.58	<0.98	<0.79	<0.83	<0.015
Trichlorotrifluoroethane	<0.02	<0.58	<0.98	<0.79	<0.83	<0.015
Trichlorofluoromethane	<0.02	<0.58	<0.98	<0.79	<0.83	<0.015
M&P-Xylene	<0.03	<0.87	<1.47	<1.18	<1.24	<0.022
O-Xylene	<0.01	<0.29	<0.49	<0.39	<0.41	<0.0074
Vinyl Chloride	<0.02	<0.58	<0.98	<0.79	<0.83	<0.015
Total	<2.90	<84.2	<143	<114	<120	<2.14

Dry Gas Volume Sampled (Rm^3*) :	0.0204
Actual Flowrate (m^3/s) :	25.4
Dry Reference Flowrate (Rm^3/s*) :	15.0
Dry Adjusted Flowrate (Rm^3/s**) :	18.7
Wet Reference Flowrate (Rm^3/s*) :	17.8

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

TABLE 83
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Emission Data
Test No. 2

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m^3	µg/Rm^3*	µg/Rm^3**	µg/Rm^3*	mg/s
Acetone	<0.1	<2.75	<4.66	<3.74	<3.93	<0.070
Benzene	0.10	2.81	4.75	3.81	4.00	0.071
Bromodichloromethane	<0.01	<0.28	<0.47	<0.37	<0.39	<0.0070
Bromoform	<0.01	<0.28	<0.47	<0.37	<0.39	<0.0070
Bromomethane	<0.09	<2.48	<4.19	<3.36	<3.53	<0.063
1,3-Butadiene	<0.02	<0.55	<0.93	<0.75	<0.79	<0.014
2-Butanone	0.020	0.55	0.93	0.75	0.79	0.014
Carbon Tetrachloride	<0.01	<0.28	<0.47	<0.37	<0.39	<0.0070
Chloroform	0.022	0.61	1.02	0.82	0.86	0.015
Cumene (Isopropylbenzene)	<0.02	<0.55	<0.93	<0.75	<0.79	<0.014
Dibromochloromethane	<0.01	<0.28	<0.47	<0.37	<0.39	<0.0070
Dichlorodifluoromethane	<0.02	<0.55	<0.93	<0.75	<0.79	<0.014
1,2-Dichloroethane	<0.01	<0.28	<0.47	<0.37	<0.39	<0.0070
trans,1,2-Dichloroethene	<0.01	<0.28	<0.47	<0.37	<0.39	<0.0070
1,1-Dichloroethene	<0.01	<0.28	<0.47	<0.37	<0.39	<0.0070
1,2-Dichloropropane	<0.01	<0.28	<0.47	<0.37	<0.39	<0.0070
Ethylbenzene	<0.01	<0.28	<0.47	<0.37	<0.39	<0.0070
Ethylene Dibromide	<0.02	<0.55	<0.93	<0.75	<0.79	<0.014
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.55	<0.93	<0.75	<0.79	<0.014
Methylene Chloride	0.11	3.05	5.17	4.15	4.36	0.078
Styrene	<0.02	<0.55	<0.93	<0.75	<0.79	<0.014
Tetrachloroethene	<0.01	<0.28	<0.47	<0.37	<0.39	<0.0070
Toluene	0.94	26.0	44.0	35.3	37.1	0.66
1,1,1-Trichloroethane	<0.01	<0.28	<0.47	<0.37	<0.39	<0.0070
Trichloroethene/1,1,2-Trichloroethene	<0.02	<0.55	<0.93	<0.75	<0.79	<0.014
Trichlorotrifluoroethane	<0.02	<0.55	<0.93	<0.75	<0.79	<0.014
Trichlorofluoromethane	<0.02	<0.55	<0.93	<0.75	<0.79	<0.014
M&P-Xylene	<0.03	<0.83	<1.40	<1.12	<1.18	<0.021
O-Xylene	<0.01	<0.28	<0.47	<0.37	<0.39	<0.0070
Vinyl Chloride	<0.02	<0.55	<0.93	<0.75	<0.79	<0.014
Total	<1.74	<47.8	<81.0	<65.0	<68.3	<1.22

Dry Gas Volume Sampled (Rm^3*) :	0.0215
Actual Flowrate (m^3/s) :	25.4
Dry Reference Flowrate (Rm^3/s*) :	15.0
Dry Adjusted Flowrate (Rm^3/s**) :	18.7
Wet Reference Flowrate (Rm^3/s*) :	17.8

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

TABLE 84
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Emission Data
Test No. 3

Compound	Total Collected µg	Actual Concentration µg/m^3	Dry Reference Concentration µg/Rm^3*	Dry Adjusted Concentration µg/Rm^3**	Wet Reference Concentration µg/Rm^3*	Emission Rate mg/s
Acetone	0.11	2.84	4.81	3.86	4.06	0.072
Benzene	0.12	3.27	5.54	4.44	4.67	0.083
Bromodichloromethane	<0.01	<0.27	<0.45	<0.36	<0.38	<0.0068
Bromoform	<0.01	<0.27	<0.45	<0.36	<0.38	<0.0068
Bromomethane	<0.09	<2.41	<4.09	<3.28	<3.44	<0.061
1,3-Butadiene	<0.02	<0.54	<0.91	<0.73	<0.77	<0.014
2-Butanone	0.024	0.64	1.09	0.87	0.92	0.016
Carbon Tetrachloride	<0.01	<0.27	<0.45	<0.36	<0.38	<0.0068
Chloroform	0.026	0.70	1.18	0.95	0.99	0.018
Cumene (Isopropylbenzene)	<0.02	<0.54	<0.91	<0.73	<0.77	<0.014
Dibromochloromethane	<0.01	<0.27	<0.45	<0.36	<0.38	<0.0068
Dichlorodifluoromethane	<0.02	<0.54	<0.91	<0.73	<0.77	<0.014
1,2-Dichloroethane	<0.01	<0.27	<0.45	<0.36	<0.38	<0.0068
trans,1,2-Dichloroethene	<0.01	<0.27	<0.45	<0.36	<0.38	<0.0068
1,1-Dichloroethene	<0.01	<0.27	<0.45	<0.36	<0.38	<0.0068
1,2-Dichloropropane	<0.01	<0.27	<0.45	<0.36	<0.38	<0.0068
Ethylbenzene	<0.01	<0.27	<0.45	<0.36	<0.38	<0.0068
Ethylene Dibromide	<0.02	<0.54	<0.91	<0.73	<0.77	<0.014
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.54	<0.91	<0.73	<0.77	<0.014
Methylene Chloride	0.13	3.51	5.95	4.77	5.01	0.089
Styrene	<0.02	<0.54	<0.91	<0.73	<0.77	<0.014
Tetrachloroethene	<0.01	<0.27	<0.45	<0.36	<0.38	<0.0068
Toluene	1.52	40.8	69.2	55.5	58.3	1.04
1,1,1-Trichloroethane	<0.01	<0.27	<0.45	<0.36	<0.38	<0.0068
Trichloroethene/1,1,2-Trichloroethene	<0.02	<0.54	<0.91	<0.73	<0.77	<0.014
Trichlorotrifluoroethane	<0.02	<0.54	<0.91	<0.73	<0.77	<0.014
Trichlorofluoromethane	<0.02	<0.54	<0.91	<0.73	<0.77	<0.014
M&P-Xylene	<0.03	<0.80	<1.36	<1.09	<1.15	<0.020
O-Xylene	<0.01	<0.27	<0.45	<0.36	<0.38	<0.0068
Vinyl Chloride	<0.02	<0.54	<0.91	<0.73	<0.77	<0.014
Total	<2.37	<63.6	<108	<86.4	<90.8	<1.62

Dry Gas Volume Sampled (Rm^3*) :	0.0220
Actual Flowrate (m^3/s) :	25.4
Dry Reference Flowrate (Rm^3/s*) :	15.0
Dry Adjusted Flowrate (Rm^3/s**) :	18.7
Wet Reference Flowrate (Rm^3/s*) :	17.8

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

TABLE 85
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Actual Concentrations

Compound	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/m^3	µg/m^3	µg/m^3	µg/m^3	%
Acetone	3.45	<2.75	2.84	<3.01	12.6
Benzene	4.26	2.81	3.27	3.45	21.6
Bromodichloromethane	<0.29	<0.28	<0.27	<0.28	4.0
Bromoform	<0.29	<0.28	<0.27	<0.28	4.0
Bromomethane	<2.61	<2.48	<2.41	<2.50	4.0
1,3-Butadiene	<0.58	<0.55	<0.54	<0.56	4.0
2-Butanone	0.78	0.55	0.64	0.66	17.8
Carbon Tetrachloride	<0.29	<0.28	<0.27	<0.28	4.0
Chloroform	0.84	0.61	0.70	0.71	16.6
Cumene (Isopropylbenzene)	<0.58	<0.55	<0.54	<0.56	4.0
Dibromochloromethane	<0.29	<0.28	<0.27	<0.28	4.0
Dichlorodifluoromethane	<0.58	<0.55	<0.54	<0.56	4.0
1,2-Dichloroethane	<0.29	<0.28	<0.27	<0.28	4.0
trans,1,2-Dichloroethene	<0.29	<0.28	<0.27	<0.28	4.0
1,1-Dichloroethene	<0.29	<0.28	<0.27	<0.28	4.0
1,2-Dichloropropane	<0.29	<0.28	<0.27	<0.28	4.0
Ethylbenzene	<0.29	<0.28	<0.27	<0.28	4.0
Ethylene Dibromide	<0.58	<0.55	<0.54	<0.56	4.0
Mesitylene (1,3,5-Trimethylbenzene)	<0.58	<0.55	<0.54	<0.56	4.0
Methylene Chloride	4.23	3.05	3.51	3.60	16.5
Styrene	<0.58	<0.55	<0.54	<0.56	4.0
Tetrachloroethene	0.32	<0.28	<0.27	<0.29	9.6
Toluene	57.8	26.0	40.8	41.5	38.4
1,1,1-Trichloroethane	<0.29	<0.28	<0.27	<0.28	4.0
Trichloroethene/1,1,2-Trichloroethene	<0.58	<0.55	<0.54	<0.56	4.0
Trichlorotrifluoroethane	<0.58	<0.55	<0.54	<0.56	4.0
Trichlorofluoromethane	<0.58	<0.55	<0.54	<0.56	4.0
M&P-Xylene	<0.87	<0.83	<0.80	<0.83	4.0
O-Xylene	<0.29	<0.28	<0.27	<0.28	4.0
Vinyl Chloride	<0.58	<0.55	<0.54	<0.56	4.0
Total	<84.2	<47.8	<63.6	<65.2	27.9

TABLE 86
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Dry Reference Concentrations

Compound	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	%
Acetone	5.84	<4.66	4.81	<5.10	12.6
Benzene	7.21	4.75	5.54	5.84	21.6
Bromodichloromethane	<0.49	<0.47	<0.45	<0.47	4.0
Bromoform	<0.49	<0.47	<0.45	<0.47	4.0
Bromomethane	<4.42	<4.19	<4.09	<4.23	4.0
1,3-Butadiene	<0.98	<0.93	<0.91	<0.94	4.0
2-Butanone	1.33	0.93	1.09	1.12	17.8
Carbon Tetrachloride	<0.49	<0.47	<0.45	<0.47	4.0
Chloroform	1.42	1.02	1.18	1.21	16.6
Cumene (Isopropylbenzene)	<0.98	<0.93	<0.91	<0.94	4.0
Dibromochloromethane	<0.49	<0.47	<0.45	<0.47	4.0
Dichlorodifluoromethane	<0.98	<0.93	<0.91	<0.94	4.0
1,2-Dichloroethane	<0.49	<0.47	<0.45	<0.47	4.0
trans,1,2-Dichloroethene	<0.49	<0.47	<0.45	<0.47	4.0
1,1-Dichloroethene	<0.49	<0.47	<0.45	<0.47	4.0
1,2-Dichloropropane	<0.49	<0.47	<0.45	<0.47	4.0
Ethylbenzene	<0.49	<0.47	<0.45	<0.47	4.0
Ethylene Dibromide	<0.98	<0.93	<0.91	<0.94	4.0
Mesitylene (1,3,5-Trimethylbenzene)	<0.98	<0.93	<0.91	<0.94	4.0
Methylene Chloride	7.17	5.17	5.95	6.10	16.5
Styrene	<0.98	<0.93	<0.91	<0.94	4.0
Tetrachloroethene	0.54	<0.47	<0.45	<0.49	9.6
Toluene	97.9	44.0	69.2	70.4	38.4
1,1,1-Trichloroethane	<0.49	<0.47	<0.45	<0.47	4.0
Trichloroethene/1,1,2-Trichloroethene	<0.98	<0.93	<0.91	<0.94	4.0
Trichlorotrifluoroethane	<0.98	<0.93	<0.91	<0.94	4.0
Trichlorofluoromethane	<0.98	<0.93	<0.91	<0.94	4.0
M&P-Xylene	<1.47	<1.40	<1.36	<1.41	4.0
O-Xylene	<0.49	<0.47	<0.45	<0.47	4.0
Vinyl Chloride	<0.98	<0.93	<0.91	<0.94	4.0
Total	<143	<81.0	<108	<110	27.9

* At 25°C and 1 atmosphere

TABLE 87
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Dry Adjusted Concentrations

Compound	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	%
Acetone	4.69	<3.74	3.86	<4.09	12.6
Benzene	5.79	3.81	4.44	4.68	21.6
Bromodichloromethane	<0.39	<0.37	<0.36	<0.38	4.0
Bromoform	<0.39	<0.37	<0.36	<0.38	4.0
Bromomethane	<3.54	<3.36	<3.28	<3.39	4.0
1,3-Butadiene	<0.79	<0.75	<0.73	<0.75	4.0
2-Butanone	1.06	0.75	0.87	0.89	17.8
Carbon Tetrachloride	<0.39	<0.37	<0.36	<0.38	4.0
Chloroform	1.14	0.82	0.95	0.97	16.6
Cumene (Isopropylbenzene)	<0.79	<0.75	<0.73	<0.75	4.0
Dibromochloromethane	<0.39	<0.37	<0.36	<0.38	4.0
Dichlorodifluoromethane	<0.79	<0.75	<0.73	<0.75	4.0
1,2-Dichloroethane	<0.39	<0.37	<0.36	<0.38	4.0
trans,1,2-Dichloroethene	<0.39	<0.37	<0.36	<0.38	4.0
1,1-Dichloroethene	<0.39	<0.37	<0.36	<0.38	4.0
1,2-Dichloropropane	<0.39	<0.37	<0.36	<0.38	4.0
Ethylbenzene	<0.39	<0.37	<0.36	<0.38	4.0
Ethylene Dibromide	<0.79	<0.75	<0.73	<0.75	4.0
Mesitylene (1,3,5-Trimethylbenzene)	<0.79	<0.75	<0.73	<0.75	4.0
Methylene Chloride	5.75	4.15	4.77	4.89	16.5
Styrene	<0.79	<0.75	<0.73	<0.75	4.0
Tetrachloroethene	0.43	<0.37	<0.36	<0.39	9.6
Toluene	78.5	35.3	55.5	56.4	38.4
1,1,1-Trichloroethane	<0.39	<0.37	<0.36	<0.38	4.0
Trichloroethene/1,1,2-Trichloroethene	<0.79	<0.75	<0.73	<0.75	4.0
Trichlorotrifluoroethane	<0.79	<0.75	<0.73	<0.75	4.0
Trichlorofluoromethane	<0.79	<0.75	<0.73	<0.75	4.0
M&P-Xylene	<1.18	<1.12	<1.09	<1.13	4.0
O-Xylene	<0.39	<0.37	<0.36	<0.38	4.0
Vinyl Chloride	<0.79	<0.75	<0.73	<0.75	4.0
Total	<114	<65.0	<86.4	<88.6	27.9

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 88
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Wet Reference Concentrations

Compound	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	%
Acetone	4.92	<3.93	4.06	<4.30	12.6
Benzene	6.08	4.00	4.67	4.92	21.6
Bromodichloromethane	<0.41	<0.39	<0.38	<0.40	4.0
Bromoform	<0.41	<0.39	<0.38	<0.40	4.0
Bromomethane	<3.72	<3.53	<3.44	<3.57	4.0
1,3-Butadiene	<0.83	<0.79	<0.77	<0.79	4.0
2-Butanone	1.12	0.79	0.92	0.94	17.8
Carbon Tetrachloride	<0.41	<0.39	<0.38	<0.40	4.0
Chloroform	1.20	0.86	0.99	1.02	16.6
Cumene (Isopropylbenzene)	<0.83	<0.79	<0.77	<0.79	4.0
Dibromochloromethane	<0.41	<0.39	<0.38	<0.40	4.0
Dichlorodifluoromethane	<0.83	<0.79	<0.77	<0.79	4.0
1,2-Dichloroethane	<0.41	<0.39	<0.38	<0.40	4.0
trans,1,2-Dichloroethene	<0.41	<0.39	<0.38	<0.40	4.0
1,1-Dichloroethene	<0.41	<0.39	<0.38	<0.40	4.0
1,2-Dichloropropane	<0.41	<0.39	<0.38	<0.40	4.0
Ethylbenzene	<0.41	<0.39	<0.38	<0.40	4.0
Ethylene Dibromide	<0.83	<0.79	<0.77	<0.79	4.0
Mesitylene (1,3,5-Trimethylbenzene)	<0.83	<0.79	<0.77	<0.79	4.0
Methylene Chloride	6.04	4.36	5.01	5.14	16.5
Styrene	<0.83	<0.79	<0.77	<0.79	4.0
Tetrachloroethene	0.45	<0.39	<0.38	<0.41	9.6
Toluene	82.5	37.1	58.3	59.3	38.4
1,1,1-Trichloroethane	<0.41	<0.39	<0.38	<0.40	4.0
Trichloroethene/1,1,2-Trichloroethene	<0.83	<0.79	<0.77	<0.79	4.0
Trichlorotrifluoroethane	<0.83	<0.79	<0.77	<0.79	4.0
Trichlorofluoromethane	<0.83	<0.79	<0.77	<0.79	4.0
M&P-Xylene	<1.24	<1.18	<1.15	<1.19	4.0
O-Xylene	<0.41	<0.39	<0.38	<0.40	4.0
Vinyl Chloride	<0.83	<0.79	<0.77	<0.79	4.0
Total	<120	<68.3	<90.8	<93.0	27.9

* At 25°C and 1 atmosphere

TABLE 89
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Emission Rates

Compound	Emission Rate				Coefficient of Variation
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	%
Acetone	0.088	<0.070	0.072	<0.077	12.6
Benzene	0.11	0.071	0.083	0.088	21.6
Bromodichloromethane	<0.0074	<0.0070	<0.0068	<0.0071	4.0
Bromoform	<0.0074	<0.0070	<0.0068	<0.0071	4.0
Bromomethane	<0.066	<0.063	<0.061	<0.063	4.0
1,3-Butadiene	<0.015	<0.014	<0.014	<0.014	4.0
2-Butanone	0.020	0.014	0.016	0.017	17.8
Carbon Tetrachloride	<0.0074	<0.0070	<0.0068	<0.0071	4.0
Chloroform	0.021	0.015	0.018	0.018	16.6
Cumene (Isopropylbenzene)	<0.015	<0.014	<0.014	<0.014	4.0
Dibromochloromethane	<0.0074	<0.0070	<0.0068	<0.0071	4.0
Dichlorodifluoromethane	<0.015	<0.014	<0.014	<0.014	4.0
1,2-Dichloroethane	<0.0074	<0.0070	<0.0068	<0.0071	4.0
trans,1,2-Dichloroethene	<0.0074	<0.0070	<0.0068	<0.0071	4.0
1,1-Dichloroethene	<0.0074	<0.0070	<0.0068	<0.0071	4.0
1,2-Dichloropropane	<0.0074	<0.0070	<0.0068	<0.0071	4.0
Ethylbenzene	<0.0074	<0.0070	<0.0068	<0.0071	4.0
Ethylene Dibromide	<0.015	<0.014	<0.014	<0.014	4.0
Mesitylene (1,3,5-Trimethylbenzene)	<0.015	<0.014	<0.014	<0.014	4.0
Methylene Chloride	0.11	0.078	0.089	0.091	16.5
Styrene	<0.015	<0.014	<0.014	<0.014	4.0
Tetrachloroethene	0.0081	<0.0070	<0.0068	<0.0073	9.6
Toluene	1.47	0.66	1.04	1.06	38.4
1,1,1-Trichloroethane	<0.0074	<0.0070	<0.0068	<0.0071	4.0
Trichloroethene/1,1,2-Trichloroethene	<0.015	<0.014	<0.014	<0.014	4.0
Trichlorotrifluoroethane	<0.015	<0.014	<0.014	<0.014	4.0
Trichlorofluoromethane	<0.015	<0.014	<0.014	<0.014	4.0
M&P-Xylene	<0.022	<0.021	<0.020	<0.021	4.0
O-Xylene	<0.0074	<0.0070	<0.0068	<0.0071	4.0
Vinyl Chloride	<0.015	<0.014	<0.014	<0.014	4.0
Total	<2.14	<1.22	<1.62	<1.66	27.9

TABLE 90
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Volatile Organic Emission Data

Compound	Actual Concentration $\mu g/m^3$	Dry Reference Concentration $\mu g/Rm^3$*	Dry Adjusted Concentration $\mu g/Rm^3$*	Wet Reference Concentration $\mu g/Rm^3$*	Emission Rate mg/s
Acetone	<3.01	<5.10	<4.09	<4.30	<0.077
Benzene	3.45	5.84	4.68	4.92	0.088
Bromodichloromethane	<0.28	<0.47	<0.38	<0.40	<0.0071
Bromoform	<0.28	<0.47	<0.38	<0.40	<0.0071
Bromomethane	<2.50	<4.23	<3.39	<3.57	<0.063
1,3-Butadiene	<0.56	<0.94	<0.75	<0.79	<0.014
2-Butanone	0.66	1.12	0.89	0.94	0.017
Carbon Tetrachloride	<0.28	<0.47	<0.38	<0.40	<0.0071
Chloroform	0.71	1.21	0.97	1.02	0.018
Cumene (Isopropylbenzene)	<0.56	<0.94	<0.75	<0.79	<0.014
Dibromochloromethane	<0.28	<0.47	<0.38	<0.40	<0.0071
Dichlorodifluoromethane	<0.56	<0.94	<0.75	<0.79	<0.014
1,2-Dichloroethane	<0.28	<0.47	<0.38	<0.40	<0.0071
trans,1,2-Dichloroethene	<0.28	<0.47	<0.38	<0.40	<0.0071
1,1-Dichloroethene	<0.28	<0.47	<0.38	<0.40	<0.0071
1,2-Dichloropropane	<0.28	<0.47	<0.38	<0.40	<0.0071
Ethylbenzene	<0.28	<0.47	<0.38	<0.40	<0.0071
Ethylene Dibromide	<0.56	<0.94	<0.75	<0.79	<0.014
Mesitylene (1,3,5-Trimethylbenzene)	<0.56	<0.94	<0.75	<0.79	<0.014
Methylene Chloride	3.60	6.10	4.89	5.14	0.091
Styrene	<0.56	<0.94	<0.75	<0.79	<0.014
Tetrachloroethene	<0.29	<0.49	<0.39	<0.41	<0.0073
Toluene	41.5	70.4	56.4	59.3	1.06
1,1,1-Trichloroethane	<0.28	<0.47	<0.38	<0.40	<0.0071
Trichloroethene/1,1,2-Trichloroethene	<0.56	<0.94	<0.75	<0.79	<0.014
Trichlorotrifluoroethane	<0.56	<0.94	<0.75	<0.79	<0.014
Trichlorofluoromethane	<0.56	<0.94	<0.75	<0.79	<0.014
M&P-Xylene	<0.83	<1.41	<1.13	<1.19	<0.021
O-Xylene	<0.28	<0.47	<0.38	<0.40	<0.0071
Vinyl Chloride	<0.56	<0.94	<0.75	<0.79	<0.014
Total	<65.2	<110	<88.6	<93.0	<1.66

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 91
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Volatile Organic Analyses

Compound	Field Blank 1 Tube 5A/5B	Trip Blank Tube 11A/11B	Method Blank
	µg	µg	µg
Acetone	<0.10	0.11	<0.10
Benzene	0.14	<0.05	<0.05
Bromodichloromethane	<0.01	<0.01	<0.01
Bromoform	<0.01	<0.01	<0.01
Bromomethane	<0.09	<0.09	<0.09
1,3-Butadiene	<0.02	<0.02	<0.02
2-Butanone	0.020	<0.01	<0.01
Carbon Tetrachloride	<0.01	<0.01	<0.01
Chloroform	<0.01	<0.01	<0.01
Cumene (Isopropylbenzene)	<0.02	<0.02	<0.02
Dibromochloromethane	<0.01	<0.01	<0.01
Dichlorodifluoromethane	<0.02	<0.02	<0.02
1,2-Dichloroethane	<0.01	<0.01	<0.01
trans,1,2-Dichloroethene	<0.01	<0.01	<0.01
1,1-Dichloroethene	<0.01	<0.01	<0.01
1,2-Dichloropropane	<0.01	<0.01	<0.01
Ethylbenzene	<0.01	<0.01	<0.01
Ethylene Dibromide	<0.02	<0.02	<0.02
Mesitylene (1,3,5-Trimethylbenzene)	0.035	<0.02	<0.02
Methylene Chloride	<0.10	0.24	<0.10
Styrene	<0.02	<0.02	<0.02
Tetrachloroethene	<0.01	<0.01	<0.01
Toluene	0.25	<0.05	<0.05
1,1,1-Trichloroethane	<0.01	<0.01	<0.01
Trichloroethene/1,1,2-Trichloroethene	<0.02	<0.02	<0.02
Trichlorotrifluoroethane	<0.02	<0.02	<0.02
Trichlorofluoromethane	<0.02	<0.02	<0.02
M&P-Xylene	<0.03	<0.03	<0.03
O-Xylene	<0.01	<0.01	<0.01
Vinyl Chloride	<0.02	<0.02	<0.02
Total	<1.07	<0.91	<0.76

Note: "<" indicates that the analyte was not detected. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

APPENDIX 2

Boiler No. 2 BH Outlet
Data Tables
(93 pages)

TABLE 1
Covanta - Durham York Energy Centre
Boiler No. 2
Isokinetic Sampling Train Test Schedules

Particulate and Metals Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	November 30, 2021	8:21	11:29	180
2	December 1, 2021	8:31	11:39	180
3	December 1, 2021	12:21	15:38	180

Particle Size Distribution Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	November 29, 2021	10:00	12:03	120
2	November 29, 2021	13:36	15:38	120
3	November 29, 2021	16:32	18:35	120

Acid Gases Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	November 30, 2021	8:22	9:22	60
2	November 30, 2021	10:01	11:01	60
3	December 1, 2021	8:33	9:33	60

Semi-Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	December 9, 2021	9:37	13:45	240
2	December 9, 2021	14:31	18:41	240
3	December 10, 2021	8:33	12:39	240

* Actual sampling time excluding leak-checks, traverse changes and process down time.

TABLE 2
Covanta - Durham York Energy Centre
Boiler No. 2
Organic Compounds Test Schedules

Acrolein and Aldehydes Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	December 9, 2021	9:34	10:34	60
2	December 9, 2021	10:41	11:41	60
3	December 9, 2021	12:03	13:03	60

Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	December 9, 2021	13:20	14:00	40
2	December 9, 2021	14:05	14:45	40
3	December 9, 2021	14:50	15:30	40
4	December 9, 2021	15:35	16:15	40

Total Hydrocarbons Trains

Sampling Location	Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
BH Outlet	1	November 28, 2021	22:10	23:10	60
BH Outlet	2	November 29, 2021	11:20	12:20	60
BH Outlet	3	November 29, 2021	12:26	13:26	60
Quench Inlet	1	November 28, 2021	22:10	23:10	60
Quench Inlet	2	November 29, 2021	11:20	12:20	60
Quench Inlet	3	November 29, 2021	12:26	13:26	60

TABLE 3
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Stack Gas Sampling Parameters

Particulate and Metals Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.848	1.026	6.43	3.792	100.5
2	0.844	1.026	6.49	3.898	100.4
3	0.844	1.026	6.49	3.873	99.9

Particle Size Distribution Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.845	1.000	4.51	1.193	93.3
2	0.845	1.000	4.51	1.205	90.2
3	0.845	1.000	4.51	1.201	95.1

Acid Gases Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.842	0.996	6.38	1.180	100.2
2	0.842	0.996	6.38	1.173	99.0
3	0.842	0.996	6.38	1.207	99.9

Semi-Volatile Organic Compounds Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.844	1.026	6.36	5.013	99.2
2	0.844	1.026	6.36	5.068	99.6
3	0.844	1.026	6.36	5.051	100.4

* Dry at 25°C and 1 atmosphere

TABLE 4
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Stack Gas Physical Parameters

Particulate and Metals Trains

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	143	15.6	18.4	-2.47	97.8	11.1	8.56
2	142	15.2	18.4	-2.64	98.3	10.9	8.79
3	141	15.2	18.4	-2.71	98.1	10.6	9.16
Average	142	15.3	18.4	-2.61	98.1	10.8	8.84

Particle Size Distribution Trains

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	143	15.9	18.8	-2.27	98.4	10.8	8.98
2	146	15.0	19.6	-2.27	98.3	10.5	9.12
3	146	16.1	18.8	-2.27	98.3	10.8	8.85
Average	145	15.7	19.1	-2.27	98.4	10.7	8.98

Acid Gases Trains **

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	142	15.9	17.6	-2.47	97.8	10.9	8.63
2	142	16.7	17.9	-2.47	97.7	11.1	8.53
3	143	15.7	17.9	-2.64	98.3	10.7	8.93
Average	142	16.1	17.8	-2.52	97.9	10.9	8.70

Semi-Volatile Organics Trains

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	142	15.1	18.5	-2.47	98.9	10.8	8.95
2	142	15.0	18.7	-2.47	98.7	10.8	8.83
3	142	15.3	18.7	-2.47	98.0	10.8	8.78
Average	142	15.1	18.6	-2.47	98.5	10.8	8.85

* Dry basis, measured by the DYEC CEMS

** Sampling was conducted isokinetically on a single traverse in the duct.

TABLE 5
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Stack Gas Volumetric Flowrates

Particulate and Metals Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	27.2	15.9	19.8	18.8
2	27.2	16.1	19.6	18.9
3	27.1	16.0	19.0	18.9
Average	27.2	16.0	19.5	18.9

Particle Size Distribution Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	27.8	16.3	19.6	19.3
2	29.0	17.0	20.2	20.0
3	27.9	16.2	19.7	19.3
Average	28.2	16.5	19.9	19.5

Acid Gases Trains ***

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	26.0	15.1	18.8	18.0
2	26.4	15.2	19.0	18.3
3	26.5	15.5	18.8	18.4
Average	26.3	15.3	18.8	18.2

Semi-Volatile Organics Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	27.4	16.3	19.7	19.2
2	27.6	16.4	20.0	19.3
3	27.6	16.2	19.9	19.2
Average	27.5	16.3	19.9	19.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

*** Sampling was conducted isokinetically on a single traverse in the duct. Volumetric flowrates from the corresponding particulate and metals tests were used to calculate emission data.

TABLE 6
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Particulate Emission Data

Test No.	Particulate Collected			Dry Gas Volume Sampled	Actual	Particulate Concentration			Particulate Emission Rate
	Probe Rinse	Main Filter	Total			Dry Reference	Dry Adjusted	Wet Reference	
	mg	mg	mg	Rm^3*	mg/m^3	mg/Rm^3*	mg/Rm^3**	mg/Rm^3*	mg/s
1	0.2	1.1	1.3	3.792	0.20	0.34	0.28	0.29	5.44
2	1.8	<0.1	<1.9	3.898	<0.29	<0.49	<0.40	<0.41	<7.82
3	0.5	0.7	1.2	3.873	0.18	0.31	0.26	0.26	4.97
Average					<0.22	<0.38	<0.31	<0.32	<6.08
Blank	<0.1	0.8	<0.9						

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 7
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
$PM_{2.5}$ and PM_{10} Emission Data

$PM_{2.5}$

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	$PM_{2.5}$ Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	<0.4	1.193	<0.20	<0.34	<0.28	<0.28	<5.47
2	<0.3	1.205	<0.15	<0.25	<0.21	<0.21	<4.23
3	<0.2	1.201	<0.097	<0.17	<0.14	<0.14	<2.70
Average			<0.15	<0.25	<0.21	<0.21	<4.13
Blank	0.5						

PM_{10}

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	PM_{10} Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	<0.5	1.193	<0.25	<0.42	<0.35	<0.35	<6.83
2	<0.6	1.205	<0.29	<0.50	<0.42	<0.42	<8.46
3	<0.3	1.201	<0.15	<0.25	<0.21	<0.21	<4.05
Average			<0.23	<0.39	<0.32	<0.33	<6.45
Blank	0.9						

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 8
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Condensable Particulate Emission Data

Inorganic Condensable Particulate

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	Inorganic Condensable Particulate Concentration				Emission Rate mg/s
			Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	
1	3.0	1.193	1.47	2.51	2.09	2.12	41.0
2	3.2	1.205	1.56	2.66	2.23	2.26	45.1
3	3.3	1.201	1.60	2.75	2.26	2.31	44.5
Average			1.54	2.64	2.19	2.23	43.5
Blank	0.5						

Organic Condensable Particulate

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	Organic Condensable Particulate Concentration				Emission Rate mg/s
			Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	
1	1.8	1.193	0.88	1.51	1.25	1.27	24.6
2	2.6	1.205	1.26	2.16	1.81	1.83	36.7
3	6.2	1.201	3.00	5.16	4.24	4.33	83.6
Average			1.72	2.94	2.44	2.48	48.3
Blank	0.5						

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 9
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Halides and Ammonia Emission Data

Hydrogen Chloride

Test No.	HCl Collected mg	Dry Volume Sampled Rm^3*	Actual mg/m^3	Hydrogen Chloride Concentration Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HCl Emission Rate mg/s
1	5.15	1.180	2.58	4.36	3.57	3.70	70.0
2	5.96	1.173	3.00	5.08	4.15	4.31	81.5
3	6.85	1.207	3.36	5.68	4.79	4.81	91.0
Average			2.98	5.04	4.17	4.27	80.9
Blank	<0.152						

Hydrogen Fluoride

Test No.	HF Collected mg	Dry Volume Sampled Rm^3*	Actual mg/m^3	Hydrogen Fluoride Concentration Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HF Emission Rate mg/s
1	<0.151	1.180	<0.076	<0.13	<0.10	<0.11	<2.05
2	<0.160	1.173	<0.081	<0.14	<0.11	<0.12	<2.19
3	<0.151	1.207	<0.074	<0.13	<0.11	<0.11	<2.01
Average			<0.077	<0.13	<0.11	<0.11	<2.08
Blank	<0.104						

Ammonia

Test No.	Ammonia Collected mg	Dry Volume Sampled Rm^3*	Actual mg/m^3	Ammonia Concentration Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Ammonia Emission Rate mg/s
1	0.525	1.180	0.26	0.44	0.36	0.38	7.14
2	0.796	1.173	0.40	0.68	0.55	0.58	10.9
3	2.52	1.207	1.23	2.09	1.76	1.77	33.5
Average			0.63	1.07	0.89	0.91	17.2
Blank	<0.278						

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 10
Covanta - Durham York Energy Centre
Boiler No. 2
Combustion Gas Analyses

Data measured by the DYEC CEMS from November 29-December 2, 2021 and December 9-10, 2021

Sampling Location	Parameter	Minimum	Average	Maximum
BH Outlet	Oxygen (%, 1 hr Avg)	8.04	9.06	10.05
BH Outlet	Carbon Monoxide (mg/Rm^3, 1 hr Avg) *	6	12	38
BH Outlet	Carbon Monoxide (mg/Rm^3, 4 hr Avg) *	7.3	11.7	23.0
BH Outlet	Sulphur Dioxide (mg/Rm^3, 1 hr Avg) *	0	0.2	11
BH Outlet	Sulphur Dioxide (mg/Rm^3, 24 hr Avg) *	0	0.2	0.8
BH Outlet	Nitrogen Oxides (mg/Rm^3, 1 hr Avg) *	81	110	130
BH Outlet	Nitrogen Oxides (mg/Rm^3, 24 hr Avg) *	109	110	111
BH Outlet	Hydrogen Chloride (mg/Rm^3, 1 hr Avg) *	0	2	6
BH Outlet	Hydrogen Chloride (mg/Rm^3, 24 hr Avg) *	0.5	1.8	3.1
BH Outlet	Total Hydrocarbons (mg/Rm^3, 1 hr Avg) *	0	0	1
Quench Inlet	Oxygen (%, 1 hr Avg)	7	8	10

Data measured by the ORTECH CEMS on November 28 and November 29, 2021

Sampling Location	Test No.	Parameter	Minimum	Average	Maximum
BH Outlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.4	0.7
BH Outlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.1	0.4
BH Outlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0	0.6
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.2	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0	0.3
Quench Inlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0	0.4
Quench Inlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0	0.5
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0	0.2
Quench Inlet	2	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0	0.2
Quench Inlet	3	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0	0.1
Average		Total Hydrocarbons (ppm dry, 10-min Avg)		0	

* Reference conditions, dry basis adjusted to 11% oxygen

TABLE 11
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Analyses Test No. 1

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	1.87	<0.1	1.87
Arsenic	<1	<0.2	<0.20
Barium	5.31	0.90	6.21
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.14	<0.05	0.14
Chromium	2.95	0.46	3.41
Cobalt	<0.2	<0.1	<0.20
Copper	6.93	2.34	9.27
Lead	0.99	0.22	1.22
Mercury *	<0.015	<0.25	<0.25
Molybdenum	30.8	<0.1	30.8
Nickel	1.49	0.47	1.96
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	11.1	3.85	15.0
Total			<72.2

* Includes the permanganate impingers

Note: "<" indicates that the analyte was not detected. Where all values were reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, the remaining fractions were assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate emission data.

TABLE 12
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Analyses Test No. 2

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	5.92	0.71	6.63
Beryllium	<0.2	<0.1	<0.20
Cadmium	<0.1	<0.05	<0.10
Chromium	2.54	0.44	2.98
Cobalt	<0.2	<0.1	<0.20
Copper	5.68	2.30	7.98
Lead	0.52	0.22	0.73
Mercury *	<0.015	<0.25	<0.25
Molybdenum	33.4	<0.1	33.4
Nickel	1.83	0.39	2.22
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	9.06	3.59	12.7
Total			<69.2

* Includes the permanganate impingers

Note: "<" indicates that the analyte was not detected. Where all values were reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, the remaining fractions were assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate emission data.

TABLE 13
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Analyses Test No. 3

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	<5	0.67	0.67
Beryllium	<0.2	<0.1	<0.20
Cadmium	<0.1	0.063	0.063
Chromium	3.55	0.45	4.00
Cobalt	<0.2	<0.1	<0.20
Copper	6.65	2.24	8.89
Lead	<0.5	0.51	0.51
Mercury *	<0.015	<0.25	<0.25
Molybdenum	32.7	<0.1	32.7
Nickel	3.16	1.87	5.03
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	7.57	7.16	14.7
Total			<69.1

* Includes the permanganate impingers

Note: "<" indicates that the analyte was not detected. Where all values were reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, the remaining fractions were assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate emission data.

TABLE 14
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Emission Data Test No. 1

Metal	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	1.87	0.29	0.49	0.40	0.42	0.0078
Arsenic	<0.20	<0.031	<0.053	<0.042	<0.044	<0.00084
Barium	6.21	0.96	1.64	1.31	1.38	0.026
Beryllium	<0.20	<0.031	<0.053	<0.042	<0.044	<0.00084
Cadmium	0.14	0.022	0.038	0.030	0.032	0.00060
Chromium	3.41	0.52	0.90	0.72	0.76	0.014
Cobalt	<0.20	<0.031	<0.053	<0.042	<0.044	<0.00084
Copper	9.27	1.43	2.44	1.96	2.06	0.039
Lead	1.22	0.19	0.32	0.26	0.27	0.0051
Mercury	<0.25	<0.038	<0.066	<0.053	<0.056	<0.0010
Molybdenum	30.8	4.74	8.12	6.52	6.85	0.13
Nickel	1.96	0.30	0.52	0.42	0.44	0.0082
Selenium	<1.00	<0.15	<0.26	<0.21	<0.22	<0.0042
Silver	<0.20	<0.031	<0.053	<0.042	<0.044	<0.00084
Thallium	<0.20	<0.031	<0.053	<0.042	<0.044	<0.00084
Vanadium	<0.10	<0.015	<0.026	<0.021	<0.022	<0.00042
Zinc	15.0	2.30	3.94	3.16	3.32	0.063
Total	<72.2	<11.1	<19.0	<15.3	<16.0	<0.30

Dry Gas Volume Sampled (Rm^3*) :	3.792
Actual Flowrate (m^3/s) :	27.2
Dry Reference Flowrate (Rm^3/s*) :	15.9
Dry Adjusted Flowrate (Rm^3/s**) :	19.8
Wet Reference Flowrate (Rm^3/s*) :	18.8

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 15
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Emission Data Test No. 2

Metal	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	<0.20	<0.030	<0.051	<0.042	<0.044	<0.00082
Arsenic	<0.20	<0.030	<0.051	<0.042	<0.044	<0.00082
Barium	6.63	1.00	1.70	1.39	1.44	0.027
Beryllium	<0.20	<0.030	<0.051	<0.042	<0.044	<0.00082
Cadmium	<0.10	<0.015	<0.026	<0.021	<0.022	<0.00041
Chromium	2.98	0.45	0.76	0.62	0.65	0.012
Cobalt	<0.20	<0.030	<0.051	<0.042	<0.044	<0.00082
Copper	7.98	1.21	2.05	1.67	1.74	0.033
Lead	0.73	0.11	0.19	0.15	0.16	0.0030
Mercury	<0.25	<0.038	<0.064	<0.052	<0.054	<0.0010
Molybdenum	33.4	5.06	8.57	7.01	7.26	0.14
Nickel	2.22	0.34	0.57	0.47	0.48	0.0092
Selenium	<1.00	<0.15	<0.26	<0.21	<0.22	<0.0041
Silver	<0.20	<0.030	<0.051	<0.042	<0.044	<0.00082
Thallium	<0.20	<0.030	<0.051	<0.042	<0.044	<0.00082
Vanadium	<0.10	<0.015	<0.026	<0.021	<0.022	<0.00041
Zinc	12.7	1.92	3.25	2.65	2.75	0.052
Total	<69.2	<10.5	<17.8	<14.5	<15.1	<0.29

Dry Gas Volume Sampled (Rm^3*) :	3.898
Actual Flowrate (m^3/s) :	27.2
Dry Reference Flowrate (Rm^3/s*) :	16.1
Dry Adjusted Flowrate (Rm^3/s**) :	19.6
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 16
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Emission Data Test No. 3

Metal	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	<0.20	<0.031	<0.052	<0.044	<0.044	<0.00083
Arsenic	<0.20	<0.031	<0.052	<0.044	<0.044	<0.00083
Barium	0.67	0.10	0.17	0.15	0.15	0.0028
Beryllium	<0.20	<0.031	<0.052	<0.044	<0.044	<0.00083
Cadmium	0.063	0.0096	0.016	0.014	0.014	0.00026
Chromium	4.00	0.61	1.03	0.87	0.87	0.017
Cobalt	<0.20	<0.031	<0.052	<0.044	<0.044	<0.00083
Copper	8.89	1.36	2.30	1.94	1.95	0.037
Lead	0.51	0.077	0.13	0.11	0.11	0.0021
Mercury	<0.25	<0.038	<0.065	<0.054	<0.055	<0.0010
Molybdenum	32.7	4.99	8.44	7.12	7.16	0.14
Nickel	5.03	0.77	1.30	1.10	1.10	0.021
Selenium	<1.00	<0.15	<0.26	<0.22	<0.22	<0.0041
Silver	<0.20	<0.031	<0.052	<0.044	<0.044	<0.00083
Thallium	<0.20	<0.031	<0.052	<0.044	<0.044	<0.00083
Vanadium	<0.10	<0.015	<0.026	<0.022	<0.022	<0.00041
Zinc	14.7	2.25	3.80	3.21	3.22	0.061
Total	<69.1	<10.6	<17.9	<15.1	<15.1	<0.29

Dry Gas Volume Sampled (Rm^3*) :	3.873
Actual Flowrate (m^3/s) :	27.1
Dry Reference Flowrate (Rm^3/s*) :	16.0
Dry Adjusted Flowrate (Rm^3/s**) :	19.0
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 17
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Metal Actual Concentrations

Metal	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/m³	µg/m³	µg/m³	µg/m³	%
Antimony	0.29	<0.030	<0.031	<0.12	128
Arsenic	<0.031	<0.030	<0.031	<0.031	0.8
Barium	0.96	1.00	0.10	0.69	73.8
Beryllium	<0.031	<0.030	<0.031	<0.031	0.8
Cadmium	0.022	<0.015	0.0096	<0.016	39.7
Chromium	0.52	0.45	0.61	0.53	15.1
Cobalt	<0.031	<0.030	<0.031	<0.031	0.8
Copper	1.43	1.21	1.36	1.33	8.4
Lead	0.19	0.11	0.077	0.13	45.1
Mercury	<0.038	<0.038	<0.038	<0.038	0.8
Molybdenum	4.74	5.06	4.99	4.93	3.4
Nickel	0.30	0.34	0.77	0.47	55.3
Selenium	<0.15	<0.15	<0.15	<0.15	0.8
Silver	<0.031	<0.030	<0.031	<0.031	0.8
Thallium	<0.031	<0.030	<0.031	<0.031	0.8
Vanadium	<0.015	<0.015	<0.015	<0.015	0.8
Zinc	2.30	1.92	2.25	2.16	9.7
Total	<11.1	<10.5	<10.6	<10.7	3.2

TABLE 18
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Metal Dry Reference Concentrations

Metal	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	0.49	<0.051	<0.052	<0.20	128
Arsenic	<0.053	<0.051	<0.052	<0.052	1.4
Barium	1.64	1.70	0.17	1.17	73.8
Beryllium	<0.053	<0.051	<0.052	<0.052	1.4
Cadmium	0.038	<0.026	0.016	<0.027	40.4
Chromium	0.90	0.76	1.03	0.90	14.9
Cobalt	<0.053	<0.051	<0.052	<0.052	1.4
Copper	2.44	2.05	2.30	2.26	8.9
Lead	0.32	0.19	0.13	0.21	45.8
Mercury	<0.066	<0.064	<0.065	<0.065	1.4
Molybdenum	8.12	8.57	8.44	8.38	2.7
Nickel	0.52	0.57	1.30	0.80	54.9
Selenium	<0.26	<0.26	<0.26	<0.26	1.4
Silver	<0.053	<0.051	<0.052	<0.052	1.4
Thallium	<0.053	<0.051	<0.052	<0.052	1.4
Vanadium	<0.026	<0.026	<0.026	<0.026	1.4
Zinc	3.94	3.25	3.80	3.66	10.1
Total	<19.0	<17.8	<17.9	<18.2	3.9

* At 25°C and 1 atmosphere

TABLE 19
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Metal Dry Adjusted Concentrations

Metal	Dry Adjusted Concentration				Coefficient
	Test No. 1 µg/Rm³**	Test No. 2 µg/Rm³**	Test No. 3 µg/Rm³**	Average µg/Rm³**	of Variation %
Antimony	0.40	<0.042	<0.044	<0.16	127
Arsenic	<0.042	<0.042	<0.044	<0.043	2.0
Barium	1.31	1.39	0.15	0.95	73.4
Beryllium	<0.042	<0.042	<0.044	<0.043	2.0
Cadmium	0.030	<0.021	0.014	<0.022	38.2
Chromium	0.72	0.62	0.87	0.74	16.8
Cobalt	<0.042	<0.042	<0.044	<0.043	2.0
Copper	1.96	1.67	1.94	1.86	8.6
Lead	0.26	0.15	0.11	0.17	43.6
Mercury	<0.053	<0.052	<0.054	<0.053	2.0
Molybdenum	6.52	7.01	7.12	6.88	4.7
Nickel	0.42	0.47	1.10	0.66	57.5
Selenium	<0.21	<0.21	<0.22	<0.21	2.0
Silver	<0.042	<0.042	<0.044	<0.043	2.0
Thallium	<0.042	<0.042	<0.044	<0.043	2.0
Vanadium	<0.021	<0.021	<0.022	<0.021	2.0
Zinc	3.16	2.65	3.21	3.01	10.2
Total	<15.3	<14.5	<15.1	<14.9	2.6

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 20
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Metal Wet Reference Concentrations

Metal	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	0.42	<0.044	<0.044	<0.17	128
Arsenic	<0.044	<0.044	<0.044	<0.044	1.1
Barium	1.38	1.44	0.15	0.99	73.8
Beryllium	<0.044	<0.044	<0.044	<0.044	1.1
Cadmium	0.032	<0.022	0.014	<0.022	40.1
Chromium	0.76	0.65	0.87	0.76	15.0
Cobalt	<0.044	<0.044	<0.044	<0.044	1.1
Copper	2.06	1.74	1.95	1.91	8.6
Lead	0.27	0.16	0.11	0.18	45.5
Mercury	<0.056	<0.054	<0.055	<0.055	1.1
Molybdenum	6.85	7.26	7.16	7.09	3.0
Nickel	0.44	0.48	1.10	0.67	55.0
Selenium	<0.22	<0.22	<0.22	<0.22	1.1
Silver	<0.044	<0.044	<0.044	<0.044	1.1
Thallium	<0.044	<0.044	<0.044	<0.044	1.1
Vanadium	<0.022	<0.022	<0.022	<0.022	1.1
Zinc	3.32	2.75	3.22	3.10	9.9
Total	<16.0	<15.1	<15.1	<15.4	3.6

* At 25°C and 1 atmosphere

TABLE 21
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Metal Emission Rates

Metal	Emission Rate				Coefficient
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	of Variation %
Antimony	0.0078	<0.00082	<0.00083	<0.0032	128
Arsenic	<0.00084	<0.00082	<0.00083	<0.00083	0.8
Barium	0.026	0.027	0.0028	0.019	73.8
Beryllium	<0.00084	<0.00082	<0.00083	<0.00083	0.8
Cadmium	0.00060	<0.00041	0.00026	<0.00042	39.8
Chromium	0.014	0.012	0.017	0.014	15.0
Cobalt	<0.00084	<0.00082	<0.00083	<0.00083	0.8
Copper	0.039	0.033	0.037	0.036	8.3
Lead	0.0051	0.0030	0.0021	0.0034	45.1
Mercury	<0.0010	<0.0010	<0.0010	<0.0010	0.8
Molybdenum	0.13	0.14	0.14	0.13	3.4
Nickel	0.0082	0.0092	0.021	0.013	55.2
Selenium	<0.0042	<0.0041	<0.0041	<0.0041	0.8
Silver	<0.00084	<0.00082	<0.00083	<0.00083	0.8
Thallium	<0.00084	<0.00082	<0.00083	<0.00083	0.8
Vanadium	<0.00042	<0.00041	<0.00041	<0.00041	0.8
Zinc	0.063	0.052	0.061	0.059	9.6
Total	<0.30	<0.29	<0.29	<0.29	3.2

TABLE 22
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Metal Emission Data

Metal	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
Antimony	<0.12	<0.20	<0.16	<0.17	<0.0032
Arsenic	<0.031	<0.052	<0.043	<0.044	<0.00083
Barium	0.69	1.17	0.95	0.99	0.019
Beryllium	<0.031	<0.052	<0.043	<0.044	<0.00083
Cadmium	<0.016	<0.027	<0.022	<0.022	<0.00042
Chromium	0.53	0.90	0.74	0.76	0.014
Cobalt	<0.031	<0.052	<0.043	<0.044	<0.00083
Copper	1.33	2.26	1.86	1.91	0.036
Lead	0.13	0.21	0.17	0.18	0.0034
Mercury	<0.038	<0.065	<0.053	<0.055	<0.0010
Molybdenum	4.93	8.38	6.88	7.09	0.13
Nickel	0.47	0.80	0.66	0.67	0.013
Selenium	<0.15	<0.26	<0.21	<0.22	<0.0041
Silver	<0.031	<0.052	<0.043	<0.044	<0.00083
Thallium	<0.031	<0.052	<0.043	<0.044	<0.00083
Vanadium	<0.015	<0.026	<0.021	<0.022	<0.00041
Zinc	2.16	3.66	3.01	3.10	0.059
Total	<10.7	<18.2	<14.9	<15.4	<0.29

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 23
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Train Metal Analyses

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	<5	0.59	0.59
Beryllium	<0.2	<0.1	<0.20
Cadmium	<0.1	<0.05	<0.10
Chromium	1.87	0.28	2.15
Cobalt	<0.2	<0.1	<0.20
Copper	5.13	1.88	7.01
Lead	<0.5	0.15	0.15
Mercury *	<0.015	<0.25	<0.25
Molybdenum	31.4	<0.1	31.4
Nickel	1.14	0.20	1.34
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	<6	<3	<6.00
Total			<51.3

* Includes the permanganate impingers.

Note: "<" indicates that the analyte was not detected. Where all values are reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate the total collected in the blank, the remaining fractions are assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate the total collected in the blank.

TABLE 24
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 1

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	97.6	0.012	0.019	0.016	0.017	0.32
Pentachlorodibenzo-p-dioxins	127	0.015	0.025	0.021	0.022	0.41
Hexachlorodibenzo-p-dioxins	258	0.031	0.051	0.043	0.044	0.84
Heptachlorodibenzo-p-dioxins	165	0.020	0.033	0.027	0.028	0.54
Octachlorodibenzo-p-dioxin	113	0.013	0.023	0.019	0.019	0.37
Total	761	0.090	0.15	0.13	0.13	2.47

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	52.1	0.0062	0.010	0.0086	0.0088	0.17
Pentachlorodibenzofurans	51.5	0.0061	0.010	0.00850	0.0087	0.17
Hexachlorodibenzofurans	59.1	0.0070	0.012	0.0098	0.010	0.19
Heptachlorodibenzofurans	5.58	0.00066	0.0011	0.00092	0.00094	0.018
Octachlorodibenzofuran	<13	<0.0015	<0.0026	<0.0021	<0.0022	<0.042
Total	<181	<0.022	<0.036	<0.030	<0.031	<0.59

Dry Gas Volume Sampled (Rm^3*) :	5.013
Actual Flowrate (m^3/s) :	27.4
Dry Reference Flowrate (Rm^3/s*) :	16.3
Dry Adjusted Flowrate (Rm^3/s**) :	19.7
Wet Reference Flowrate (Rm^3/s*) :	19.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 25
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 2

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	130	0.015	0.026	0.021	0.022	0.42
Pentachlorodibenzo-p-dioxins	176	0.021	0.035	0.028	0.030	0.57
Hexachlorodibenzo-p-dioxins	324	0.038	0.064	0.052	0.054	1.05
Heptachlorodibenzo-p-dioxins	197	0.023	0.039	0.032	0.033	0.64
Octachlorodibenzo-p-dioxin	136	0.016	0.027	0.022	0.023	0.44
Total	963	0.11	0.19	0.16	0.16	3.12

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	98.8	0.012	0.019	0.016	0.017	0.32
Pentachlorodibenzofurans	172	0.020	0.034	0.028	0.029	0.56
Hexachlorodibenzofurans	123	0.014	0.024	0.020	0.021	0.40
Heptachlorodibenzofurans	71.7	0.0084	0.014	0.012	0.012	0.23
Octachlorodibenzofuran	17.9	0.0021	0.0035	0.003	0.0030	0.058
Total	483	0.057	0.095	0.078	0.081	1.56

Dry Gas Volume Sampled (Rm^3*) :	5.068
Actual Flowrate (m^3/s) :	27.6
Dry Reference Flowrate (Rm^3/s*) :	16.4
Dry Adjusted Flowrate (Rm^3/s**) :	20.0
Wet Reference Flowrate (Rm^3/s*) :	19.3

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 26
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 3

Dioxins

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	103	0.012	0.020	0.017	0.017	0.33
Pentachlorodibenzo-p-dioxins	121	0.014	0.024	0.020	0.020	0.39
Hexachlorodibenzo-p-dioxins	276	0.032	0.055	0.044	0.046	0.89
Heptachlorodibenzo-p-dioxins	154	0.018	0.030	0.025	0.026	0.49
Octachlorodibenzo-p-dioxin	112	0.013	0.022	0.018	0.019	0.36
Total	766	0.089	0.15	0.12	0.13	2.46

Furans

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	20.4	0.0024	0.0040	0.0033	0.0034	0.065
Pentachlorodibenzofurans	31.2	0.0036	0.0062	0.0050	0.0052	0.10
Hexachlorodibenzofurans	52.9	0.0061	0.010	0.0085	0.0088	0.17
Heptachlorodibenzofurans	22.6	0.0026	0.0045	0.0036	0.0038	0.072
Octachlorodibenzofuran	<11	<0.0013	<0.0022	<0.0018	<0.0018	<0.035
Total	<138	<0.016	<0.027	<0.022	<0.023	<0.44

Dry Gas Volume Sampled (Rm^3*) :	5.051
Actual Flowrate (m^3/s) :	27.6
Dry Reference Flowrate (Rm^3/s*) :	16.2
Dry Adjusted Flowrate (Rm^3/s**) :	19.9
Wet Reference Flowrate (Rm^3/s*) :	19.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 27
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Actual Concentrations

Dioxins

Congener Group	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzo-p-dioxins	0.012	0.015	0.012	0.013	15.5
Pentachlorodibenzo-p-dioxins	0.015	0.021	0.014	0.017	21.3
Hexachlorodibenzo-p-dioxins	0.031	0.038	0.032	0.034	11.6
Heptachlorodibenzo-p-dioxins	0.020	0.023	0.018	0.020	13.1
Octachlorodibenzo-p-dioxin	0.013	0.016	0.013	0.014	11.3
Total	0.090	0.11	0.089	0.097	13.8

Furans

Congener Group	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzofurans	0.0062	0.012	0.0024	0.0067	69.0
Pentachlorodibenzofurans	0.0061	0.020	0.0036	0.010	89.5
Hexachlorodibenzofurans	0.0070	0.014	0.0061	0.0092	49.5
Heptachlorodibenzofurans	0.00066	0.0084	0.0026	0.0039	103
Octachlorodibenzofuran	<0.0015	0.0021	<0.0013	<0.0016	25.5
Total	<0.022	0.057	<0.016	<0.031	70.2

TABLE 28
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Dry Reference Concentrations

Dioxins

Congener Group	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	0.019	0.026	0.020	0.022	15.3
Pentachlorodibenzo-p-dioxins	0.025	0.035	0.024	0.028	20.9
Hexachlorodibenzo-p-dioxins	0.051	0.064	0.055	0.057	11.4
Heptachlorodibenzo-p-dioxins	0.033	0.039	0.030	0.034	12.7
Octachlorodibenzo-p-dioxin	0.023	0.027	0.022	0.024	10.9
Total	0.15	0.19	0.15	0.16	13.5

Furans

Congener Group	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	0.010	0.019	0.0040	0.011	68.7
Pentachlorodibenzofurans	0.010	0.034	0.0062	0.017	89.2
Hexachlorodibenzofurans	0.012	0.024	0.010	0.016	49.1
Heptachlorodibenzofurans	0.0011	0.014	0.0045	0.0066	103
Octachlorodibenzofuran	<0.0026	0.0035	<0.0022	<0.0028	25.1
Total	<0.036	0.095	<0.027	<0.053	69.9

* At 25°C and 1 atmosphere

TABLE 29
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Dry Adjusted Concentrations

Dioxins

Congener Group	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.016	0.021	0.017	0.018	15.1
Pentachlorodibenzo-p-dioxins	0.021	0.028	0.020	0.023	21.0
Hexachlorodibenzo-p-dioxins	0.043	0.052	0.044	0.046	11.2
Heptachlorodibenzo-p-dioxins	0.027	0.032	0.025	0.028	12.8
Octachlorodibenzo-p-dioxin	0.019	0.022	0.018	0.020	10.9
Total	0.13	0.16	0.12	0.13	13.4

Furans

Congener Group	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.0086	0.016	0.0033	0.0093	68.6
Pentachlorodibenzofurans	0.0085	0.028	0.0050	0.014	89.1
Hexachlorodibenzofurans	0.0098	0.020	0.0085	0.013	49.1
Heptachlorodibenzofurans	0.00092	0.012	0.0036	0.0054	103
Octachlorodibenzofuran	<0.0021	0.0029	<0.0018	<0.0023	25.2
Total	<0.030	0.078	<0.022	<0.043	69.8

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 30
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Wet Reference Concentrations

Dioxins

Congener Group	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	0.017	0.022	0.017	0.019	15.5
Pentachlorodibenzo-p-dioxins	0.022	0.030	0.020	0.024	21.2
Hexachlorodibenzo-p-dioxins	0.044	0.054	0.046	0.048	11.6
Heptachlorodibenzo-p-dioxins	0.028	0.033	0.026	0.029	13.0
Octachlorodibenzo-p-dioxin	0.019	0.023	0.019	0.020	11.1
Total	0.13	0.16	0.13	0.14	13.7

Furans

Congener Group	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	0.0088	0.017	0.0034	0.0096	68.9
Pentachlorodibenzofurans	0.0087	0.029	0.0052	0.014	89.4
Hexachlorodibenzofurans	0.010	0.021	0.0088	0.013	49.4
Heptachlorodibenzofurans	0.00094	0.012	0.0038	0.0056	103
Octachlorodibenzofuran	<0.0022	0.0030	<0.0018	<0.0023	25.4
Total	<0.031	0.081	<0.023	<0.045	70.1

* At 25°C and 1 atmosphere

TABLE 31
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Rates

Dioxins

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.32	0.42	0.33	0.36	15.8
Pentachlorodibenzo-p-dioxins	0.41	0.57	0.39	0.46	21.5
Hexachlorodibenzo-p-dioxins	0.84	1.05	0.89	0.92	11.9
Heptachlorodibenzo-p-dioxins	0.54	0.64	0.49	0.56	13.3
Octachlorodibenzo-p-dioxin	0.37	0.44	0.36	0.39	11.4
Total	2.47	3.12	2.46	2.68	14.0

Furans

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzofurans	0.17	0.32	0.07	0.18	69.2
Pentachlorodibenzofurans	0.17	0.56	0.10	0.27	89.7
Hexachlorodibenzofurans	0.19	0.40	0.17	0.25	49.7
Heptachlorodibenzofurans	0.018	0.23	0.072	0.11	103
Octachlorodibenzofuran	<0.042	0.058	<0.035	<0.045	25.7
Total	<0.59	1.56	<0.44	<0.87	70.4

TABLE 32
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Congener Group Emission Data

Dioxins

Congener Group	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	0.013	0.022	0.018	0.019	0.36
Pentachlorodibenzo-p-dioxins	0.017	0.028	0.023	0.024	0.46
Hexachlorodibenzo-p-dioxins	0.034	0.057	0.046	0.048	0.92
Heptachlorodibenzo-p-dioxins	0.020	0.034	0.028	0.029	0.56
Octachlorodibenzo-p-dioxin	0.014	0.024	0.020	0.020	0.39
Total	0.097	0.16	0.13	0.14	2.68

Furans

Congener Group	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	0.0067	0.011	0.0093	0.0096	0.18
Pentachlorodibenzofurans	0.010	0.017	0.014	0.014	0.27
Hexachlorodibenzofurans	0.0092	0.016	0.013	0.013	0.25
Heptachlorodibenzofurans	0.0039	0.0066	0.0054	0.0056	0.11
Octachlorodibenzofuran	<0.0016	<0.0028	<0.0023	<0.0023	<0.045
Total	<0.031	<0.053	<0.043	<0.045	<0.87

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 33
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Dioxin and Furan Congener Group Analyses

Dioxins

Congener Group	Blank Train pg	Method Blank pg
Tetrachlorodibenzo-p-dioxins	<6.3	<0.77
Pentachlorodibenzo-p-dioxins	<2.8	<0.45
Hexachlorodibenzo-p-dioxins	<4.3	<0.52
Heptachlorodibenzo-p-dioxins	<6.1	3.40
Octachlorodibenzo-p-dioxin	<68	24.1
Total	<87.5	<29.2

Furans

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzofurans	<2.9	<0.50
Pentachlorodibenzofurans	<1.5	2.16
Hexachlorodibenzofurans	5.87	5.64
Heptachlorodibenzofurans	<3.3	1.19
Octachlorodibenzofuran	<17	7.02
Total	<30.6	<16.5

"<" indicates that the amount detected is less than the detection limit
In these cases the value of the detection limit was used to calculate the total collected.

TABLE 34
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 1

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<1.7	<0.20	<0.34	<0.28	<0.29	<0.0055
12378-pentachlorodibenzo-p-dioxin	3.08	0.37	0.61	0.51	0.52	0.010
123478-hexachlorodibenzo-p-dioxin	6.71	0.80	1.34	1.11	1.14	0.022
123678-hexachlorodibenzo-p-dioxin	<10	<1.19	<1.99	<1.65	<1.69	<0.033
123789-hexachlorodibenzo-p-dioxin	5.26	0.62	1.05	0.87	0.89	0.017
1234678-heptachlorodibenzo-p-dioxin	80.3	9.53	16.0	13.3	13.6	0.26
Octachlorodibenzo-p-dioxin	113	13.4	22.5	18.7	19.1	0.37
2378-tetrachlorodibenzofuran	<1.8	<0.21	<0.36	<0.30	<0.30	<0.0059
12378-pentachlorodibenzofuran	<3.3	<0.39	<0.66	<0.54	<0.56	<0.011
23478-pentachlorodibenzofuran	<6.9	<0.82	<1.38	<1.14	<1.17	<0.022
123478-hexachlorodibenzofuran	6.58	0.78	1.31	1.09	1.11	0.021
123678-hexachlorodibenzofuran	7.05	0.84	1.41	1.16	1.19	0.023
234678-hexachlorodibenzofuran	10.8	1.28	2.15	1.78	1.83	0.035
123789-hexachlorodibenzofuran	6.09	0.72	1.21	1.01	1.03	0.020
1234678-heptachlorodibenzofuran	<20	<2.37	<3.99	<3.30	<3.39	<0.065
1234789-heptachlorodibenzofuran	<2.9	<0.34	<0.58	<0.48	<0.49	<0.0094
Octachlorodibenzofuran	<13	<1.54	<2.59	<2.15	<2.20	<0.042
PCB 81	<13	<1.54	<2.59	<2.15	<2.20	<0.042
PCB 77	175	20.8	34.9	28.9	29.6	0.57
PCB 123	<48	<5.70	<9.58	<7.92	<8.13	<0.16
PCB 118	3750	445	748	619	635	12.2
PCB 114	70.1	8.32	14.0	11.6	11.9	0.23
PCB 105	1340	159	267	221	227	4.36
PCB 126	<27	<3.20	<5.39	<4.46	<4.57	<0.088
PCB 167	54.3	6.44	10.8	8.96	9.20	0.18
PCB 156/157	171	20.3	34.1	28.2	29.0	0.56
PCB 169	<7.4	<0.88	<1.48	<1.22	<1.25	<0.024
PCB 189	<6.3	<0.75	<1.26	<1.04	<1.07	<0.020
Total Dioxins & Furans Only	<298	<35.4	<59.5	<49.3	<50.5	<0.97
Total PCBs Only	<5662	<672	<1129	<935	<959	<18.4
Total Dioxins & Furans and PCBs	<5961	<707	<1189	<984	<1009	<19.4

Dry Gas Volume Sampled (Rm^3*) :	5.013
Actual Flowrate (m^3/s) :	27.4
Dry Reference Flowrate (Rm^3/s*) :	16.3
Dry Adjusted Flowrate (Rm^3/s**) :	19.7
Wet Reference Flowrate (Rm^3/s*) :	19.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 35
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 2

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<2.6	<0.30	<0.51	<0.42	<0.44	<0.0084
12378-pentachlorodibenzo-p-dioxin	<3.3	<0.39	<0.65	<0.53	<0.55	<0.011
123478-hexachlorodibenzo-p-dioxin	6.81	0.80	1.34	1.10	1.14	0.022
123678-hexachlorodibenzo-p-dioxin	14.1	1.65	2.78	2.28	2.36	0.046
123789-hexachlorodibenzo-p-dioxin	9.32	1.09	1.84	1.51	1.56	0.030
1234678-heptachlorodibenzo-p-dioxin	96.1	11.3	19.0	15.5	16.1	0.31
Octachlorodibenzo-p-dioxin	136	15.9	26.8	22.0	22.8	0.44
2378-tetrachlorodibenzofuran	4.88	0.57	0.96	0.79	0.82	0.016
12378-pentachlorodibenzofuran	10.5	1.23	2.07	1.70	1.76	0.034
23478-pentachlorodibenzofuran	<11	<1.29	<2.17	<1.78	<1.84	<0.036
123478-hexachlorodibenzofuran	<15	<1.76	<2.96	<2.43	<2.52	<0.049
123678-hexachlorodibenzofuran	14.6	1.71	2.88	2.36	2.45	0.047
234678-hexachlorodibenzofuran	<15	<1.76	<2.96	<2.43	<2.52	<0.049
123789-hexachlorodibenzofuran	8.74	1.02	1.72	1.41	1.47	0.028
1234678-heptachlorodibenzofuran	43.0	5.04	8.48	6.96	7.21	0.14
1234789-heptachlorodibenzofuran	5.90	0.69	1.16	0.95	0.99	0.019
Octachlorodibenzofuran	17.9	2.10	3.53	2.90	3.00	0.058
PCB 81	<14	<1.64	<2.76	<2.27	<2.35	<0.045
PCB 77	312	36.6	61.6	50.5	52.3	1.01
PCB 123	<97	<11.4	<19.1	<15.7	<16.3	<0.31
PCB 118	7860	922	1551	1272	1318	25.4
PCB 114	180	21.1	35.5	29.1	30.2	0.58
PCB 105	3120	366	616	505	523	10.1
PCB 126	<44	<5.16	<8.68	<7.12	<7.38	<0.14
PCB 167	110	12.9	21.7	17.8	18.4	0.36
PCB 156/157	342	40.1	67.5	55.3	57.3	1.11
PCB 169	<10	<1.17	<1.97	<1.62	<1.68	<0.032
PCB 189	<5.1	<0.60	<1.01	<0.83	<0.86	<0.017
Total Dioxins & Furans Only	<415	<48.6	<81.8	<67.1	<69.5	<1.34
Total PCBs Only	<12094	<1418	<2386	<1957	<2028	<39.1
Total Dioxins & Furans and PCBs	<12509	<1467	<2468	<2024	<2097	<40.5

Dry Gas Volume Sampled (Rm³*) :	5.068
Actual Flowrate (m³/s) :	27.6
Dry Reference Flowrate (Rm³/s*) :	16.4
Dry Adjusted Flowrate (Rm³/s**) :	20.0
Wet Reference Flowrate (Rm³/s*) :	19.3

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 36
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 3

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<1.4	<0.16	<0.28	<0.23	<0.23	<0.0045
12378-pentachlorodibenzo-p-dioxin	3.32	0.39	0.66	0.54	0.55	0.011
123478-hexachlorodibenzo-p-dioxin	<4.6	<0.53	<0.91	<0.74	<0.77	<0.015
123678-hexachlorodibenzo-p-dioxin	12.3	1.43	2.44	1.98	2.05	0.039
123789-hexachlorodibenzo-p-dioxin	<6.1	<0.71	<1.21	<0.98	<1.02	<0.020
1234678-heptachlorodibenzo-p-dioxin	74.3	8.63	14.7	12.0	12.4	0.24
Octachlorodibenzo-p-dioxin	112	13.0	22.2	18.1	18.7	0.36
2378-tetrachlorodibenzofuran	<1.7	<0.20	<0.34	<0.27	<0.28	<0.0055
12378-pentachlorodibenzofuran	<3.5	<0.41	<0.69	<0.56	<0.58	<0.011
23478-pentachlorodibenzofuran	6.64	0.77	1.31	1.07	1.11	0.021
123478-hexachlorodibenzofuran	<5.7	<0.66	<1.13	<0.92	<0.95	<0.018
123678-hexachlorodibenzofuran	<5.4	<0.63	<1.07	<0.87	<0.90	<0.017
234678-hexachlorodibenzofuran	10.9	1.27	2.16	1.76	1.82	0.035
123789-hexachlorodibenzofuran	6.74	0.78	1.33	1.09	1.13	0.022
1234678-heptachlorodibenzofuran	22.6	2.63	4.47	3.64	3.78	0.072
1234789-heptachlorodibenzofuran	<3.4	<0.40	<0.67	<0.55	<0.57	<0.011
Octachlorodibenzofuran	<11	<1.28	<2.18	<1.77	<1.84	<0.035
PCB 81	<32	<3.72	<6.34	<5.16	<5.35	<0.10
PCB 77	189	22.0	37.4	30.5	31.6	0.61
PCB 123	69.7	8.10	13.8	11.2	11.6	0.22
PCB 118	3140	365	622	506	525	10.1
PCB 114	<76	<8.83	<15.0	<12.2	<12.7	<0.24
PCB 105	875	102	173	141	146	2.81
PCB 126	<24	<2.79	<4.75	<3.87	<4.01	<0.077
PCB 167	<23	<2.67	<4.55	<3.71	<3.84	<0.074
PCB 156/157	<64	<7.44	<12.7	<10.3	<10.7	<0.21
PCB 169	<9.0	<1.05	<1.78	<1.45	<1.50	<0.029
PCB 189	<5.0	<0.58	<0.99	<0.81	<0.84	<0.016
Total Dioxins & Furans Only	<292	<33.9	<57.7	<47.0	<48.7	<0.94
Total PCBs Only	<4507	<524	<892	<726	<753	<14.5
Total Dioxins & Furans and PCBs	<4798	<558	<950	<773	<802	<15.4

Dry Gas Volume Sampled (Rm³*) :	5.051
Actual Flowrate (m³/s) :	27.6
Dry Reference Flowrate (Rm³/s*) :	16.2
Dry Adjusted Flowrate (Rm³/s**) :	19.9
Wet Reference Flowrate (Rm³/s*) :	19.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 37
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Actual Concentrations

Specific Isomer	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/m³	pg/m³	pg/m³	pg/m³	%
2378-tetrachlorodibenzo-p-dioxin	<0.20	<0.30	<0.16	<0.22	32.9
12378-pentachlorodibenzo-p-dioxin	0.37	<0.39	0.39	<0.38	3.2
123478-hexachlorodibenzo-p-dioxin	0.80	0.80	<0.53	<0.71	21.4
123678-hexachlorodibenzo-p-dioxin	<1.19	1.65	1.43	<1.42	16.4
123789-hexachlorodibenzo-p-dioxin	0.62	1.09	<0.71	<0.81	30.9
1234678-heptachlorodibenzo-p-dioxin	9.53	11.3	8.63	9.81	13.6
Octachlorodibenzo-p-dioxin	13.4	15.9	13.0	14.1	11.3
2378-tetrachlorodibenzofuran	<0.21	0.57	<0.20	<0.33	64.6
12378-pentachlorodibenzofuran	<0.39	1.23	<0.41	<0.68	71.0
23478-pentachlorodibenzofuran	<0.82	<1.29	0.77	<0.96	29.8
123478-hexachlorodibenzofuran	0.78	<1.76	<0.66	<1.07	56.4
123678-hexachlorodibenzofuran	0.84	1.71	<0.63	<1.06	54.3
234678-hexachlorodibenzofuran	1.28	<1.76	1.27	<1.44	19.5
123789-hexachlorodibenzofuran	0.72	1.02	0.78	0.84	18.9
1234678-heptachlorodibenzofuran	<2.37	5.04	2.63	<3.35	44.0
1234789-heptachlorodibenzofuran	<0.34	0.69	<0.40	<0.48	39.4
Octachlorodibenzofuran	<1.54	2.10	<1.28	<1.64	25.5
PCB 81	<1.54	<1.64	<3.72	<2.30	53.4
PCB 77	20.8	36.6	22.0	26.4	33.3
PCB 123	<5.70	<11.4	8.10	<8.39	34.0
PCB 118	445	922	365	577	52.1
PCB 114	8.32	21.1	<8.83	<12.8	56.8
PCB 105	159	366	102	209	66.5
PCB 126	<3.20	<5.16	<2.79	<3.72	34.0
PCB 167	6.44	12.9	<2.67	<7.34	70.5
PCB 156/157	20.3	40.1	<7.44	<22.6	72.8
PCB 169	<0.88	<1.17	<1.05	<1.03	14.3
PCB 189	<0.75	<0.60	<0.58	<0.64	14.3
Total Dioxins & Furans Only	<35.4	<48.6	<33.9	<39.3	20.6
Total PCBs Only	<672	<1418	<524	<871	55.0
Total Dioxins & Furans and PCBs	<707	<1467	<558	<911	53.5

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 38
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.34	<0.51	<0.28	<0.38	32.5
12378-pentachlorodibenzo-p-dioxin	0.61	<0.65	0.66	<0.64	3.6
123478-hexachlorodibenzo-p-dioxin	1.34	1.34	<0.91	<1.20	20.7
123678-hexachlorodibenzo-p-dioxin	<1.99	2.78	2.44	<2.40	16.4
123789-hexachlorodibenzo-p-dioxin	1.05	1.84	<1.21	<1.37	30.6
1234678-heptachlorodibenzo-p-dioxin	16.0	19.0	14.7	16.6	13.1
Octachlorodibenzo-p-dioxin	22.5	26.8	22.2	23.9	10.9
2378-tetrachlorodibenzofuran	<0.36	0.96	<0.34	<0.55	64.3
12378-pentachlorodibenzofuran	<0.66	2.07	<0.69	<1.14	70.7
23478-pentachlorodibenzofuran	<1.38	<2.17	1.31	<1.62	29.5
123478-hexachlorodibenzofuran	1.31	<2.96	<1.13	<1.80	56.0
123678-hexachlorodibenzofuran	1.41	2.88	<1.07	<1.79	54.0
234678-hexachlorodibenzofuran	2.15	<2.96	2.16	<2.42	19.1
123789-hexachlorodibenzofuran	1.21	1.72	1.33	1.42	18.7
1234678-heptachlorodibenzofuran	<3.99	8.48	4.47	<5.65	43.7
1234789-heptachlorodibenzofuran	<0.58	1.16	<0.67	<0.81	39.0
Octachlorodibenzofuran	<2.59	3.53	<2.18	<2.77	25.1
PCB 81	<2.59	<2.76	<6.34	<3.90	54.2
PCB 77	34.9	61.6	37.4	44.6	33.0
PCB 123	<9.58	<19.1	13.8	<14.2	33.8
PCB 118	748	1551	622	974	51.8
PCB 114	14.0	35.5	<15.0	<21.5	56.4
PCB 105	267	616	173	352	66.2
PCB 126	<5.39	<8.68	<4.75	<6.27	33.6
PCB 167	10.8	21.7	<4.55	<12.4	70.2
PCB 156/157	34.1	67.5	<12.7	<38.1	72.5
PCB 169	<1.48	<1.97	<1.78	<1.74	14.4
PCB 189	<1.26	<1.01	<0.99	<1.08	13.8
Total Dioxins & Furans Only	<59.5	<81.8	<57.7	<66.4	20.2
Total PCBs Only	<1129	<2386	<892	<1469	54.6
Total Dioxins & Furans and PCBs	<1189	<2468	<950	<1536	53.2

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 39
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.28	<0.42	<0.23	<0.31	32.6
12378-pentachlorodibenzo-p-dioxin	0.51	<0.53	0.54	<0.53	2.9
123478-hexachlorodibenzo-p-dioxin	1.11	1.10	<0.74	<0.98	21.3
123678-hexachlorodibenzo-p-dioxin	<1.65	2.28	1.98	<1.97	16.0
123789-hexachlorodibenzo-p-dioxin	0.87	1.51	<0.98	<1.12	30.5
1234678-heptachlorodibenzo-p-dioxin	13.3	15.5	12.0	13.6	13.3
Octachlorodibenzo-p-dioxin	18.7	22.0	18.1	19.6	10.9
2378-tetrachlorodibenzofuran	<0.30	0.79	<0.27	<0.45	64.2
12378-pentachlorodibenzofuran	<0.54	1.70	<0.56	<0.94	70.6
23478-pentachlorodibenzofuran	<1.14	<1.78	1.07	<1.33	29.4
123478-hexachlorodibenzofuran	1.09	<2.43	<0.92	<1.48	56.0
123678-hexachlorodibenzofuran	1.16	2.36	<0.87	<1.47	53.9
234678-hexachlorodibenzofuran	1.78	<2.43	1.76	<1.99	19.1
123789-hexachlorodibenzofuran	1.01	1.41	1.09	1.17	18.5
1234678-heptachlorodibenzofuran	<3.30	6.96	3.64	<4.63	43.6
1234789-heptachlorodibenzofuran	<0.48	0.95	<0.55	<0.66	38.9
Octachlorodibenzofuran	<2.15	2.90	<1.77	<2.27	25.2
PCB 81	<2.15	<2.27	<5.16	<3.19	53.5
PCB 77	28.9	50.5	30.5	36.6	32.9
PCB 123	<7.92	<15.7	11.2	<11.6	33.6
PCB 118	619	1272	506	799	51.7
PCB 114	11.6	29.1	<12.2	<17.6	56.4
PCB 105	221	505	141	289	66.1
PCB 126	<4.46	<7.12	<3.87	<5.15	33.7
PCB 167	8.96	17.8	<3.71	<10.2	70.1
PCB 156/157	28.2	55.3	<10.3	<31.3	72.4
PCB 169	<1.22	<1.62	<1.45	<1.43	13.9
PCB 189	<1.04	<0.83	<0.81	<0.89	14.6
Total Dioxins & Furans Only	<49.3	<67.1	<47.0	<54.5	20.2
Total PCBs Only	<935	<1957	<726	<1206	54.6
Total Dioxins & Furans and PCBs	<984	<2024	<773	<1260	53.1

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 40
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.29	<0.44	<0.23	<0.32	32.8
12378-pentachlorodibenzo-p-dioxin	0.52	<0.55	0.55	<0.54	3.4
123478-hexachlorodibenzo-p-dioxin	1.14	1.14	<0.77	<1.02	21.1
123678-hexachlorodibenzo-p-dioxin	<1.69	2.36	2.05	<2.04	16.5
123789-hexachlorodibenzo-p-dioxin	0.89	1.56	<1.02	<1.16	30.8
1234678-heptachlorodibenzo-p-dioxin	13.6	16.1	12.4	14.0	13.5
Octachlorodibenzo-p-dioxin	19.1	22.8	18.7	20.2	11.1
2378-tetrachlorodibenzofuran	<0.30	0.82	<0.28	<0.47	64.5
12378-pentachlorodibenzofuran	<0.56	1.76	<0.58	<0.97	70.9
23478-pentachlorodibenzofuran	<1.17	<1.84	1.11	<1.37	29.7
123478-hexachlorodibenzofuran	1.11	<2.52	<0.95	<1.53	56.3
123678-hexachlorodibenzofuran	1.19	2.45	<0.90	<1.51	54.2
234678-hexachlorodibenzofuran	1.83	<2.52	1.82	<2.05	19.4
123789-hexachlorodibenzofuran	1.03	1.47	1.13	1.21	18.9
1234678-heptachlorodibenzofuran	<3.39	7.21	3.78	<4.79	43.9
1234789-heptachlorodibenzofuran	<0.49	0.99	<0.57	<0.68	39.3
Octachlorodibenzofuran	<2.20	3.00	<1.84	<2.35	25.4
PCB 81	<2.20	<2.35	<5.35	<3.30	53.8
PCB 77	29.6	52.3	31.6	37.8	33.2
PCB 123	<8.13	<16.3	11.6	<12.0	34.0
PCB 118	635	1318	525	826	52.0
PCB 114	11.9	30.2	<12.7	<18.2	56.7
PCB 105	227	523	146	299	66.4
PCB 126	<4.57	<7.38	<4.01	<5.32	33.9
PCB 167	9.20	18.4	<3.84	<10.5	70.4
PCB 156/157	29.0	57.3	<10.7	<32.3	72.7
PCB 169	<1.25	<1.68	<1.50	<1.48	14.4
PCB 189	<1.07	<0.86	<0.84	<0.92	14.0
Total Dioxins & Furans Only	<50.5	<69.5	<48.7	<56.3	20.5
Total PCBs Only	<959	<2028	<753	<1247	54.9
Total Dioxins & Furans and PCBs	<1009	<2097	<802	<1303	53.4

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 41
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Rates

Specific Isomer	Emission Rate				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/s	ng/s	ng/s	ng/s	%
2378-tetrachlorodibenzo-p-dioxin	<0.0055	<0.0084	<0.0045	<0.0061	33.1
12378-pentachlorodibenzo-p-dioxin	0.010	<0.011	0.011	<0.010	3.6
123478-hexachlorodibenzo-p-dioxin	0.022	0.022	<0.015	<0.020	21.2
123678-hexachlorodibenzo-p-dioxin	<0.033	0.046	0.039	<0.039	16.7
123789-hexachlorodibenzo-p-dioxin	0.017	0.030	<0.020	<0.022	31.1
1234678-heptachlorodibenzo-p-dioxin	0.26	0.31	0.24	0.27	13.8
Octachlorodibenzo-p-dioxin	0.37	0.44	0.36	0.39	11.4
2378-tetrachlorodibenzofuran	<0.0059	0.016	<0.0055	<0.0090	64.8
12378-pentachlorodibenzofuran	<0.011	0.034	<0.011	<0.019	71.2
23478-pentachlorodibenzofuran	<0.022	<0.036	0.021	<0.026	30.1
123478-hexachlorodibenzofuran	0.021	<0.049	<0.018	<0.029	56.6
123678-hexachlorodibenzofuran	0.023	0.047	<0.017	<0.029	54.6
234678-hexachlorodibenzofuran	0.035	<0.049	0.035	<0.040	19.7
123789-hexachlorodibenzofuran	0.020	0.028	0.022	0.023	19.2
1234678-heptachlorodibenzofuran	<0.065	0.14	0.072	<0.092	44.3
1234789-heptachlorodibenzofuran	<0.0094	0.019	<0.011	<0.013	39.6
Octachlorodibenzofuran	<0.042	0.058	<0.035	<0.045	25.7
PCB 81	<0.042	<0.045	<0.10	<0.063	53.6
PCB 77	0.57	1.01	0.61	0.73	33.6
PCB 123	<0.16	<0.31	0.22	<0.23	34.3
PCB 118	12.2	25.4	10.1	15.9	52.4
PCB 114	0.23	0.58	<0.24	<0.35	57.0
PCB 105	4.36	10.1	2.81	5.75	66.7
PCB 126	<0.088	<0.14	<0.077	<0.10	34.2
PCB 167	0.18	0.36	<0.074	<0.20	70.7
PCB 156/157	0.56	1.11	<0.21	<0.62	73.0
PCB 169	<0.024	<0.032	<0.029	<0.028	14.7
PCB 189	<0.020	<0.017	<0.016	<0.018	13.8
Total Dioxins & Furans Only	<0.97	<1.34	<0.94	<1.08	20.8
Total PCBs Only	<18.4	<39.1	<14.5	<24.0	55.2
Total Dioxins & Furans and PCBs	<19.4	<40.5	<15.4	<25.1	53.7

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 42
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Specific Isomer Emission Data

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.22	<0.38	<0.31	<0.32	<0.0061
12378-pentachlorodibenzo-p-dioxin	<0.38	<0.64	<0.53	<0.54	<0.010
123478-hexachlorodibenzo-p-dioxin	<0.71	<1.20	<0.98	<1.02	<0.020
123678-hexachlorodibenzo-p-dioxin	<1.42	<2.40	<1.97	<2.04	<0.039
123789-hexachlorodibenzo-p-dioxin	<0.81	<1.37	<1.12	<1.16	<0.022
1234678-heptachlorodibenzo-p-dioxin	9.81	16.6	13.6	14.0	0.27
Octachlorodibenzo-p-dioxin	14.1	23.9	19.6	20.2	0.39
2378-tetrachlorodibenzofuran	<0.33	<0.55	<0.45	<0.47	<0.0090
12378-pentachlorodibenzofuran	<0.68	<1.14	<0.94	<0.97	<0.019
23478-pentachlorodibenzofuran	<0.96	<1.62	<1.33	<1.37	<0.026
123478-hexachlorodibenzofuran	<1.07	<1.80	<1.48	<1.53	<0.029
123678-hexachlorodibenzofuran	<1.06	<1.79	<1.47	<1.51	<0.029
234678-hexachlorodibenzofuran	<1.44	<2.42	<1.99	<2.05	<0.040
123789-hexachlorodibenzofuran	0.84	1.42	1.17	1.21	0.023
1234678-heptachlorodibenzofuran	<3.35	<5.65	<4.63	<4.79	<0.092
1234789-heptachlorodibenzofuran	<0.48	<0.81	<0.66	<0.68	<0.013
Octachlorodibenzofuran	<1.64	<2.77	<2.27	<2.35	<0.045
PCB 81	<2.30	<3.90	<3.19	<3.30	<0.063
PCB 77	26.4	44.6	36.6	37.8	0.73
PCB 123	<8.39	<14.2	<11.6	<12.0	<0.23
PCB 118	577	974	799	826	15.9
PCB 114	<12.8	<21.5	<17.6	<18.2	<0.35
PCB 105	209	352	289	299	5.75
PCB 126	<3.72	<6.27	<5.15	<5.32	<0.10
PCB 167	<7.34	<12.4	<10.2	<10.5	<0.20
PCB 156/157	<22.6	<38.1	<31.3	<32.3	<0.62
PCB 169	<1.03	<1.74	<1.43	<1.48	<0.028
PCB 189	<0.64	<1.08	<0.89	<0.92	<0.018
Total Dioxins & Furans Only	<39.3	<66.4	<54.5	<56.3	<1.08
Total PCBs Only	<871	<1469	<1206	<1247	<24.0
Total Dioxins & Furans and PCBs	<911	<1536	<1260	<1303	<25.1

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 43
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Dioxin and Furan Specific Isomer Analyses

Specific Isomer	Blank Train pg	Method Blank pg
2378-tetrachlorodibenzo-p-dioxin	<6.3	<0.77
12378-pentachlorodibenzo-p-dioxin	<2.8	<0.45
123478-hexachlorodibenzo-p-dioxin	<4.3	<0.52
123678-hexachlorodibenzo-p-dioxin	<3.6	<0.82
123789-hexachlorodibenzo-p-dioxin	<3.6	<0.92
1234678-heptachlorodibenzo-p-dioxin	<6.1	3.40
Octachlorodibenzo-p-dioxin	<68	24.1
2378-tetrachlorodibenzofuran	<2.9	<0.50
12378-pentachlorodibenzofuran	<1.5	2.16
23478-pentachlorodibenzofuran	<1.4	<0.47
123478-hexachlorodibenzofuran	<4.3	<0.51
123678-hexachlorodibenzofuran	<3.7	0.62
234678-hexachlorodibenzofuran	<4.2	<0.58
123789-hexachlorodibenzofuran	5.87	5.02
1234678-heptachlorodibenzofuran	<3.4	<1.1
1234789-heptachlorodibenzofuran	<3.3	1.19
Octachlorodibenzofuran	<17	7.02
PCB 81	<12	<13
PCB 77	30.7	<12
PCB 123	<9.2	<12
PCB 118	375	<25
PCB 114	<9.0	<12
PCB 105	132	<10
PCB 126	<26	<11
PCB 167	<6.9	<6.5
PCB 156/157	<11	<8.1
PCB 169	<7.5	<6.7
PCB 189	<3.4	<4.7
Total Dioxins & Furans Only	<142	<50.2
Total PCBs Only	<623	<121
Total Dioxins & Furans and PCBs	<765	<171

"<" indicates that the amount detected is less than the detection limit
In these cases the value of the detection limit was used to calculate the total collected.

TABLE 44
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Actual Concentrations

Specific Isomer	Toxicity Equivalency Factor	Actual Concentration Test No. 1 pg TEQ/m³	Test No. 2 pg TEQ/m³	Test No. 3 pg TEQ/m³	Average pg TEQ/m³
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.20	<0.30	<0.16	<0.22
12378-pentachlorodibenzo-p-dioxin	1.00000	0.37	<0.39	0.39	<0.38
123478-hexachlorodibenzo-p-dioxin	0.10000	0.080	0.080	<0.053	<0.071
123678-hexachlorodibenzo-p-dioxin	0.10000	<0.12	0.17	0.14	<0.14
123789-hexachlorodibenzo-p-dioxin	0.10000	0.062	0.11	<0.071	<0.081
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.095	0.11	0.086	0.098
Octachlorodibenzo-p-dioxin	0.00030	0.0040	0.0048	0.0039	0.0042
2378-tetrachlorodibenzofuran	0.10000	<0.021	0.057	<0.020	<0.033
12378-pentachlorodibenzofuran	0.03000	<0.012	0.037	<0.012	<0.020
23478-pentachlorodibenzofuran	0.30000	<0.25	<0.39	0.23	<0.29
123478-hexachlorodibenzofuran	0.10000	0.078	<0.18	<0.066	<0.11
123678-hexachlorodibenzofuran	0.10000	0.084	0.17	<0.063	<0.11
234678-hexachlorodibenzofuran	0.10000	0.13	<0.18	0.13	<0.14
123789-hexachlorodibenzofuran	0.10000	0.072	0.10	0.078	0.084
1234678-heptachlorodibenzofuran	0.01000	<0.024	0.050	0.026	<0.033
1234789-heptachlorodibenzofuran	0.01000	<0.0034	0.0069	<0.0040	<0.0048
Octachlorodibenzofuran	0.00030	<0.00046	0.00063	<0.00038	<0.00049
PCB 81	0.00030	<0.00046	<0.00049	<0.0011	<0.00069
PCB 77	0.00010	0.0021	0.0037	0.0022	0.0026
PCB 123	0.00003	<0.00017	<0.00034	0.00024	<0.00025
PCB 118	0.00003	0.013	0.028	0.011	0.017
PCB 114	0.00003	0.00025	0.00063	<0.00026	<0.00038
PCB 105	0.00003	0.0048	0.011	0.0031	0.0063
PCB 126	0.10000	<0.32	<0.52	<0.28	<0.37
PCB 167	0.00003	0.00019	0.00039	<0.000080	<0.00022
PCB 156/157	0.00003	0.00061	0.0012	<0.00022	<0.00068
PCB 169	0.03000	<0.026	<0.035	<0.031	<0.031
PCB 189	0.00003	<0.000022	<0.000018	<0.000017	<0.000019
Total Dioxins & Furans Only		<1.60	<2.33	<1.53	<1.82
Total PCBs Only		<0.37	<0.60	<0.33	<0.43
Total Dioxins & Furans and PCBs		<1.96	<2.92	<1.86	<2.25

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 45
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Dry Reference Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.34	<0.51	<0.28	<0.38
12378-pentachlorodibenzo-p-dioxin	1.00000	0.61	<0.65	0.66	<0.64
123478-hexachlorodibenzo-p-dioxin	0.10000	0.13	0.13	<0.091	<0.12
123678-hexachlorodibenzo-p-dioxin	0.10000	<0.20	0.28	0.24	<0.24
123789-hexachlorodibenzo-p-dioxin	0.10000	0.10	0.18	<0.12	<0.14
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.16	0.19	0.15	0.17
Octachlorodibenzo-p-dioxin	0.00030	0.0068	0.0081	0.0067	0.0072
2378-tetrachlorodibenzofuran	0.10000	<0.036	0.096	<0.034	<0.055
12378-pentachlorodibenzofuran	0.03000	<0.020	0.062	<0.021	<0.034
23478-pentachlorodibenzofuran	0.30000	<0.41	<0.65	0.39	<0.49
123478-hexachlorodibenzofuran	0.10000	0.13	<0.30	<0.11	<0.18
123678-hexachlorodibenzofuran	0.10000	0.14	0.29	<0.11	<0.18
234678-hexachlorodibenzofuran	0.10000	0.22	<0.30	0.22	<0.24
123789-hexachlorodibenzofuran	0.10000	0.12	0.17	0.13	0.14
1234678-heptachlorodibenzofuran	0.01000	<0.040	0.085	0.045	<0.056
1234789-heptachlorodibenzofuran	0.01000	<0.0058	0.012	<0.0067	<0.0081
Octachlorodibenzofuran	0.00030	<0.00078	0.0011	<0.00065	<0.00083
PCB 81	0.00030	<0.00078	<0.00083	<0.0019	<0.0012
PCB 77	0.00010	0.0035	0.0062	0.0037	0.0045
PCB 123	0.00003	<0.00029	<0.00057	0.00041	<0.00043
PCB 118	0.00003	0.022	0.047	0.019	0.029
PCB 114	0.00003	0.00042	0.0011	<0.00045	<0.00065
PCB 105	0.00003	0.0080	0.018	0.0052	0.011
PCB 126	0.10000	<0.54	<0.87	<0.48	<0.63
PCB 167	0.00003	0.00032	0.00065	<0.00014	<0.00037
PCB 156/157	0.00003	0.0010	0.0020	<0.00038	<0.0011
PCB 169	0.03000	<0.044	<0.059	<0.053	<0.052
PCB 189	0.00003	<0.000038	<0.000030	<0.000030	<0.000033
Total Dioxins & Furans Only		<2.68	<3.92	<2.61	<3.07
Total PCBs Only		<0.62	<1.00	<0.56	<0.73
Total Dioxins & Furans and PCBs		<3.30	<4.92	<3.17	<3.80

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 46
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.28	<0.42	<0.23	<0.31
12378-pentachlorodibenzo-p-dioxin	1.00000	0.51	<0.53	0.54	<0.53
123478-hexachlorodibenzo-p-dioxin	0.10000	0.11	0.11	<0.074	<0.098
123678-hexachlorodibenzo-p-dioxin	0.10000	<0.17	0.23	0.20	<0.20
123789-hexachlorodibenzo-p-dioxin	0.10000	0.087	0.15	<0.098	<0.11
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.13	0.16	0.12	0.14
Octachlorodibenzo-p-dioxin	0.00030	0.0056	0.0066	0.0054	0.0059
2378-tetrachlorodibenzofuran	0.10000	<0.030	0.079	<0.027	<0.045
12378-pentachlorodibenzofuran	0.03000	<0.016	0.051	<0.017	<0.028
23478-pentachlorodibenzofuran	0.30000	<0.34	<0.53	0.32	<0.40
123478-hexachlorodibenzofuran	0.10000	0.11	<0.24	<0.092	<0.15
123678-hexachlorodibenzofuran	0.10000	0.12	0.24	<0.087	<0.15
234678-hexachlorodibenzofuran	0.10000	0.18	<0.24	0.18	<0.20
123789-hexachlorodibenzofuran	0.10000	0.10	0.14	0.11	0.12
1234678-heptachlorodibenzofuran	0.01000	<0.033	0.070	0.036	<0.046
1234789-heptachlorodibenzofuran	0.01000	<0.0048	0.0095	<0.0055	<0.0066
Octachlorodibenzofuran	0.00030	<0.00064	0.00087	<0.00053	<0.00068
PCB 81	0.00030	<0.00064	<0.00068	<0.0015	<0.00096
PCB 77	0.00010	0.0029	0.0050	0.0030	0.0037
PCB 123	0.00003	<0.00024	<0.00047	0.00034	<0.00035
PCB 118	0.00003	0.019	0.038	0.015	0.024
PCB 114	0.00003	0.00035	0.00087	<0.00037	<0.00053
PCB 105	0.00003	0.0066	0.015	0.0042	0.0087
PCB 126	0.10000	<0.45	<0.71	<0.39	<0.51
PCB 167	0.00003	0.00027	0.00053	<0.00011	<0.00030
PCB 156/157	0.00003	0.00085	0.0017	<0.00031	<0.00094
PCB 169	0.03000	<0.037	<0.049	<0.044	<0.043
PCB 189	0.00003	<0.000031	<0.000025	<0.000024	<0.000027
Total Dioxins & Furans Only		<2.22	<3.21	<2.13	<2.52
Total PCBs Only		<0.51	<0.82	<0.46	<0.60
Total Dioxins & Furans and PCBs		<2.73	<4.04	<2.58	<3.12

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 46A
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using Half the Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.00000	0.14	0.21	0.11	0.15
12378-pentachlorodibenzo-p-dioxin	1.00000	0.51	0.27	0.54	0.44
123478-hexachlorodibenzo-p-dioxin	0.10000	0.11	0.11	0.037	0.086
123678-hexachlorodibenzo-p-dioxin	0.10000	0.083	0.23	0.20	0.17
123789-hexachlorodibenzo-p-dioxin	0.10000	0.087	0.15	0.049	0.096
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.13	0.16	0.12	0.14
Octachlorodibenzo-p-dioxin	0.00030	0.0056	0.0066	0.0054	0.0059
2378-tetrachlorodibenzofuran	0.10000	0.015	0.079	0.014	0.036
12378-pentachlorodibenzofuran	0.03000	0.0082	0.051	0.0085	0.023
23478-pentachlorodibenzofuran	0.30000	0.17	0.27	0.32	0.25
123478-hexachlorodibenzofuran	0.10000	0.11	0.12	0.046	0.092
123678-hexachlorodibenzofuran	0.10000	0.12	0.12	0.044	0.093
234678-hexachlorodibenzofuran	0.10000	0.18	0.12	0.18	0.16
123789-hexachlorodibenzofuran	0.10000	0.10	0.14	0.11	0.12
1234678-heptachlorodibenzofuran	0.01000	0.017	0.070	0.036	0.041
1234789-heptachlorodibenzofuran	0.01000	0.0024	0.0095	0.0027	0.0049
Octachlorodibenzofuran	0.00030	0.00032	0.00087	0.00027	0.00049
PCB 81	0.00030	0.00032	0.00034	0.00077	0.00048
PCB 77	0.00010	0.0029	0.0050	0.0030	0.0037
PCB 123	0.00003	0.00012	0.00024	0.00034	0.00023
PCB 118	0.00003	0.019	0.038	0.015	0.024
PCB 114	0.00003	0.00035	0.00087	0.00018	0.00047
PCB 105	0.00003	0.0066	0.015	0.0042	0.0087
PCB 126	0.10000	0.22	0.36	0.19	0.26
PCB 167	0.00003	0.00027	0.00053	0.000056	0.00029
PCB 156/157	0.00003	0.00085	0.0017	0.00015	0.00089
PCB 169	0.03000	0.018	0.024	0.022	0.021
PCB 189	0.00003	0.000016	0.000012	0.000012	0.000013
Total Dioxins & Furans Only		1.78	2.11	1.81	1.90
Total PCBs Only		0.27	0.44	0.24	0.32
Total Dioxins & Furans and PCBs		2.05	2.55	2.05	2.22

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 46B
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.28	<0.42	<0.23	<0.31
12378-pentachlorodibenzo-p-dioxin	0.500	0.25	<0.27	0.27	<0.26
123478-hexachlorodibenzo-p-dioxin	0.100	0.11	0.11	<0.074	<0.098
123678-hexachlorodibenzo-p-dioxin	0.100	<0.17	0.23	0.20	<0.20
123789-hexachlorodibenzo-p-dioxin	0.100	0.087	0.15	<0.098	<0.11
1234678-heptachlorodibenzo-p-dioxin	0.010	0.13	0.16	0.12	0.14
Octachlorodibenzo-p-dioxin	0.001	0.019	0.022	0.018	0.020
2378-tetrachlorodibenzofuran	0.100	<0.030	0.079	<0.027	<0.045
12378-pentachlorodibenzofuran	0.050	<0.027	0.085	<0.028	<0.047
23478-pentachlorodibenzofuran	0.500	<0.57	<0.89	0.54	<0.66
123478-hexachlorodibenzofuran	0.100	0.11	<0.24	<0.092	<0.15
123678-hexachlorodibenzofuran	0.100	0.12	0.24	<0.087	<0.15
234678-hexachlorodibenzofuran	0.100	0.18	<0.24	0.18	<0.20
123789-hexachlorodibenzofuran	0.100	0.10	0.14	0.11	0.12
1234678-heptachlorodibenzofuran	0.010	<0.033	0.070	0.036	<0.046
1234789-heptachlorodibenzofuran	0.010	<0.0048	0.0095	<0.0055	<0.0066
Octachlorodibenzofuran	0.001	<0.0021	0.0029	<0.0018	<0.0023
Total Dioxins & Furans		<2.22	<3.35	<2.10	<2.56
In-Stack Emission Limit					60

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

NATO/CCMS (1989) Toxicity Equivalency Factors

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 47
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Wet Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Wet Reference Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.29	<0.44	<0.23	<0.32
12378-pentachlorodibenzo-p-dioxin	1.00000	0.52	<0.55	0.55	<0.54
123478-hexachlorodibenzo-p-dioxin	0.10000	0.11	0.11	<0.077	<0.10
123678-hexachlorodibenzo-p-dioxin	0.10000	<0.17	0.24	0.21	<0.20
123789-hexachlorodibenzo-p-dioxin	0.10000	0.089	0.16	<0.10	<0.12
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.14	0.16	0.12	0.14
Octachlorodibenzo-p-dioxin	0.00030	0.0057	0.0068	0.0056	0.0061
2378-tetrachlorodibenzofuran	0.10000	<0.030	0.082	<0.028	<0.047
12378-pentachlorodibenzofuran	0.03000	<0.017	0.053	<0.018	<0.029
23478-pentachlorodibenzofuran	0.30000	<0.35	<0.55	0.33	<0.41
123478-hexachlorodibenzofuran	0.10000	0.11	<0.25	<0.095	<0.15
123678-hexachlorodibenzofuran	0.10000	0.12	0.24	<0.090	<0.15
234678-hexachlorodibenzofuran	0.10000	0.18	<0.25	0.18	<0.21
123789-hexachlorodibenzofuran	0.10000	0.10	0.15	0.11	0.12
1234678-heptachlorodibenzofuran	0.01000	<0.034	0.072	0.038	<0.048
1234789-heptachlorodibenzofuran	0.01000	<0.0049	0.0099	<0.0057	<0.0068
Octachlorodibenzofuran	0.00030	<0.00066	0.00090	<0.00055	<0.00070
PCB 81	0.00030	<0.00066	<0.00070	<0.0016	<0.00099
PCB 77	0.00010	0.0030	0.0052	0.0032	0.0038
PCB 123	0.00003	<0.00024	<0.00049	0.00035	<0.00036
PCB 118	0.00003	0.019	0.040	0.016	0.025
PCB 114	0.00003	0.00036	0.00091	<0.00038	<0.00055
PCB 105	0.00003	0.0068	0.016	0.0044	0.0090
PCB 126	0.10000	<0.46	<0.74	<0.40	<0.53
PCB 167	0.00003	0.00028	0.00055	<0.00012	<0.00031
PCB 156/157	0.00003	0.00087	0.0017	<0.00032	<0.00097
PCB 169	0.03000	<0.038	<0.050	<0.045	<0.044
PCB 189	0.00003	<0.000032	<0.000026	<0.000025	<0.000028
Total Dioxins & Furans Only		<2.28	<3.33	<2.21	<2.60
Total PCBs Only		<0.53	<0.85	<0.47	<0.62
Total Dioxins & Furans and PCBs		<2.80	<4.18	<2.68	<3.22

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 48
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Emission Rates

Specific Isomer	Toxicity Equivalency Factor	Emission Rate Test No. 1 ng TEQ/s	Test No. 2 ng TEQ/s	Test No. 3 ng TEQ/s	Average ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.0055	<0.0084	<0.0045	<0.0061
12378-pentachlorodibenzo-p-dioxin	1.00000	0.010	<0.011	0.011	<0.010
123478-hexachlorodibenzo-p-dioxin	0.10000	0.0022	0.0022	<0.0015	<0.0020
123678-hexachlorodibenzo-p-dioxin	0.10000	<0.0033	0.0046	0.0039	<0.0039
123789-hexachlorodibenzo-p-dioxin	0.10000	0.0017	0.0030	<0.0020	<0.0022
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.0026	0.0031	0.0024	0.0027
Octachlorodibenzo-p-dioxin	0.00030	0.00011	0.00013	0.00011	0.00012
2378-tetrachlorodibenzofuran	0.10000	<0.00059	0.0016	<0.00055	<0.00090
12378-pentachlorodibenzofuran	0.03000	<0.00032	0.0010	<0.00034	<0.00056
23478-pentachlorodibenzofuran	0.30000	<0.0067	<0.011	0.0064	<0.0079
123478-hexachlorodibenzofuran	0.10000	0.0021	<0.0049	<0.0018	<0.0029
123678-hexachlorodibenzofuran	0.10000	0.0023	0.0047	<0.0017	<0.0029
234678-hexachlorodibenzofuran	0.10000	0.0035	<0.0049	0.0035	<0.0040
123789-hexachlorodibenzofuran	0.10000	0.0020	0.0028	0.0022	0.0023
1234678-heptachlorodibenzofuran	0.01000	<0.00065	0.0014	0.00072	<0.00092
1234789-heptachlorodibenzofuran	0.01000	<0.000094	0.00019	<0.00011	<0.00013
Octachlorodibenzofuran	0.00030	<0.000013	0.000017	<0.000011	<0.000014
PCB 81	0.00030	<0.000013	<0.000014	<0.000031	<0.000019
PCB 77	0.00010	0.000057	0.00010	0.000061	0.000073
PCB 123	0.00003	<0.0000047	<0.0000094	0.0000067	<0.0000069
PCB 118	0.00003	0.00037	0.00076	0.00030	0.00048
PCB 114	0.00003	0.0000068	0.000017	<0.0000073	<0.000011
PCB 105	0.00003	0.00013	0.00030	0.000084	0.00017
PCB 126	0.10000	<0.0088	<0.014	<0.0077	<0.010
PCB 167	0.00003	0.0000053	0.000011	<0.0000022	<0.0000061
PCB 156/157	0.00003	0.000017	0.000033	<0.0000062	<0.000019
PCB 169	0.03000	<0.00072	<0.00097	<0.00087	<0.00085
PCB 189	0.00003	<0.00000061	<0.00000050	<0.00000048	<0.00000053
Total Dioxins & Furans Only		<0.044	<0.064	<0.042	<0.050
Total PCBs Only		<0.010	<0.016	<0.0091	<0.012
Total Dioxins & Furans and PCBs		<0.054	<0.081	<0.051	<0.062

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 49
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using the Full Detection Limit

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg TEQ/m³	pg TEQ/Rm³*	pg TEQ/Rm³**	pg TEQ/Rm³*	ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	<0.22	<0.38	<0.31	<0.32	<0.0061
12378-pentachlorodibenzo-p-dioxin	<0.38	<0.64	<0.53	<0.54	<0.010
123478-hexachlorodibenzo-p-dioxin	<0.071	<0.12	<0.098	<0.10	<0.0020
123678-hexachlorodibenzo-p-dioxin	<0.14	<0.24	<0.20	<0.20	<0.0039
123789-hexachlorodibenzo-p-dioxin	<0.081	<0.14	<0.11	<0.12	<0.0022
1234678-heptachlorodibenzo-p-dioxin	0.098	0.17	0.14	0.14	0.0027
Octachlorodibenzo-p-dioxin	0.0042	0.0072	0.0059	0.0061	0.00012
2378-tetrachlorodibenzofuran	<0.033	<0.055	<0.045	<0.047	<0.00090
12378-pentachlorodibenzofuran	<0.020	<0.034	<0.028	<0.029	<0.00056
23478-pentachlorodibenzofuran	<0.29	<0.49	<0.40	<0.41	<0.0079
123478-hexachlorodibenzofuran	<0.11	<0.18	<0.15	<0.15	<0.0029
123678-hexachlorodibenzofuran	<0.11	<0.18	<0.15	<0.15	<0.0029
234678-hexachlorodibenzofuran	<0.14	<0.24	<0.20	<0.21	<0.0040
123789-hexachlorodibenzofuran	0.084	0.14	0.12	0.12	0.0023
1234678-heptachlorodibenzofuran	<0.033	<0.056	<0.046	<0.048	<0.00092
1234789-heptachlorodibenzofuran	<0.0048	<0.0081	<0.0066	<0.0068	<0.00013
Octachlorodibenzofuran	<0.00049	<0.00083	<0.00068	<0.00070	<0.000014
PCB 81	<0.00069	<0.0012	<0.00096	<0.00099	<0.000019
PCB 77	0.0026	0.0045	0.0037	0.0038	0.000073
PCB 123	<0.00025	<0.00043	<0.00035	<0.00036	<0.0000069
PCB 118	0.017	0.029	0.024	0.025	0.00048
PCB 114	<0.00038	<0.00065	<0.00053	<0.00055	<0.000011
PCB 105	0.0063	0.011	0.0087	0.0090	0.00017
PCB 126	<0.37	<0.63	<0.51	<0.53	<0.010
PCB 167	<0.00022	<0.00037	<0.00030	<0.00031	<0.0000061
PCB 156/157	<0.00068	<0.0011	<0.00094	<0.00097	<0.000019
PCB 169	<0.031	<0.052	<0.043	<0.044	<0.00085
PCB 189	<0.000019	<0.000033	<0.000027	<0.000028	<0.00000053
Total Dioxins & Furans Only	<1.82	<3.07	<2.52	<2.60	<0.050
Total PCBs Only	<0.43	<0.73	<0.60	<0.62	<0.012
Total Dioxins & Furans and PCBs	<2.25	<3.80	<3.12	<3.22	<0.062

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 50
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using Half the Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m^3	Dry Reference Concentration pg TEQ/Rm^3*	Dry Adjusted Concentration pg TEQ/Rm^3**	Wet Reference Concentration pg TEQ/Rm^3*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	0.11	0.19	0.15	0.16	0.0031
12378-pentachlorodibenzo-p-dioxin	0.31	0.53	0.44	0.45	0.0087
123478-hexachlorodibenzo-p-dioxin	0.062	0.10	0.086	0.089	0.0017
123678-hexachlorodibenzo-p-dioxin	0.12	0.21	0.17	0.18	0.0034
123789-hexachlorodibenzo-p-dioxin	0.069	0.12	0.096	0.099	0.0019
1234678-heptachlorodibenzo-p-dioxin	0.098	0.17	0.14	0.14	0.0027
Octachlorodibenzo-p-dioxin	0.0042	0.0072	0.0059	0.0061	0.00012
2378-tetrachlorodibenzofuran	0.026	0.044	0.036	0.037	0.00071
12378-pentachlorodibenzofuran	0.016	0.027	0.023	0.023	0.00045
23478-pentachlorodibenzofuran	0.18	0.31	0.25	0.26	0.0050
123478-hexachlorodibenzofuran	0.066	0.11	0.092	0.095	0.0018
123678-hexachlorodibenzofuran	0.067	0.11	0.093	0.096	0.0018
234678-hexachlorodibenzofuran	0.11	0.19	0.16	0.16	0.0031
123789-hexachlorodibenzofuran	0.084	0.14	0.12	0.12	0.0023
1234678-heptachlorodibenzofuran	0.030	0.050	0.041	0.042	0.00081
1234789-heptachlorodibenzofuran	0.0035	0.0060	0.0049	0.0051	0.000098
Octachlorodibenzofuran	0.00035	0.00059	0.00049	0.00050	0.0000097
PCB 81	0.00035	0.00058	0.00048	0.00049	0.0000095
PCB 77	0.0026	0.0045	0.0037	0.0038	0.000073
PCB 123	0.00017	0.00028	0.00023	0.00024	0.0000046
PCB 118	0.017	0.029	0.024	0.025	0.00048
PCB 114	0.00034	0.00057	0.00047	0.00048	0.0000093
PCB 105	0.0063	0.011	0.0087	0.0090	0.00017
PCB 126	0.19	0.31	0.26	0.27	0.0051
PCB 167	0.00021	0.00035	0.00029	0.00030	0.0000057
PCB 156/157	0.00064	0.0011	0.00089	0.00092	0.000018
PCB 169	0.015	0.026	0.021	0.022	0.00043
PCB 189	0.0000096	0.000016	0.000013	0.000014	0.00000027
Total Dioxins & Furans Only	1.37	2.32	1.90	1.96	0.038
Total PCBs Only	0.23	0.39	0.32	0.33	0.0063
Total Dioxins & Furans and PCBs	1.60	2.71	2.22	2.29	0.044

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 51
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Data for Chlorobenzenes
Test No. 1

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	226	26.8	45.1	37.3	38.3	0.73
1,3-Dichlorobenzene	113	13.4	22.5	18.7	19.1	0.37
1,4-Dichlorobenzene	62.2	7.38	12.4	10.3	10.5	0.20
1,2-Dichlorobenzene	119	14.1	23.7	19.6	20.2	0.39
Total Dichlorobenzene	294	34.9	58.7	48.6	49.8	0.96
1,3,5-trichlorobenzene	14.3	1.70	2.85	2.36	2.42	0.046
1,2,4-trichlorobenzene	32.6	3.87	6.50	5.38	5.52	0.11
1,2,3-trichlorobenzene	<12	<1.42	<2.39	<1.98	<2.03	<0.039
Total Trichlorobenzene	<58.9	<6.99	<11.7	<9.72	<9.97	<0.19
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.42	<2.39	<1.98	<2.03	<0.039
1,2,3,4-tetrachlorobenzene	<12	<1.42	<2.39	<1.98	<2.03	<0.039
Total Tetrachlorobenzene	<24.0	<2.85	<4.79	<3.96	<4.06	<0.078
Pentachlorobenzene	<12	<1.42	<2.39	<1.98	<2.03	<0.039
Hexachlorobenzene	<12	<1.42	<2.39	<1.98	<2.03	<0.039
Total Chlorobenzenes	<627	<74.4	<125	<104	<106	<2.04

Dry Gas Volume Sampled (Rm^3*) :	5.013
Actual Flowrate (m^3/s) :	27.4
Dry Reference Flowrate (Rm^3/s*) :	16.3
Dry Adjusted Flowrate (Rm^3/s**) :	19.7
Wet Reference Flowrate (Rm^3/s*) :	19.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 52
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Data for Chlorobenzenes
Test No. 2

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	NQ	NQ	NQ	NQ	NQ	NQ
1,3-Dichlorobenzene	166	19.5	32.8	26.9	27.8	0.54
1,4-Dichlorobenzene	75.8	8.89	15.0	12.3	12.7	0.25
1,2-Dichlorobenzene	125	14.7	24.7	20.2	21.0	0.40
Total Dichlorobenzene	367	43.0	72.4	59.3	61.5	1.19
1,3,5-trichlorobenzene	16.0	1.88	3.16	2.59	2.68	0.052
1,2,4-trichlorobenzene	33.5	3.93	6.61	5.42	5.62	0.11
1,2,3-trichlorobenzene	12.4	1.45	2.45	2.01	2.08	0.040
Total Trichlorobenzene	61.9	7.26	12.2	10.0	10.4	0.20
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.41	<2.37	<1.94	<2.01	<0.039
1,2,3,4-tetrachlorobenzene	<12	<1.41	<2.37	<1.94	<2.01	<0.039
Total Tetrachlorobenzene	<24.0	<2.81	<4.74	<3.88	<4.02	<0.078
Pentachlorobenzene	<12	<1.41	<2.37	<1.94	<2.01	<0.039
Hexachlorobenzene	<12	<1.41	<2.37	<1.94	<2.01	<0.039
Total Chlorobenzenes	<477	<55.9	<94.1	<77.1	<79.9	<1.54

Dry Gas Volume Sampled (Rm^3*) :	5.068
Actual Flowrate (m^3/s) :	27.6
Dry Reference Flowrate (Rm^3/s*) :	16.4
Dry Adjusted Flowrate (Rm^3/s**) :	20.0
Wet Reference Flowrate (Rm^3/s*) :	19.3

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.
"NQ" indcates that the compound could not be quantified by the analytical laboratory.

TABLE 53
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Data for Chlorobenzenes
Test No. 3

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	280	32.5	55.4	45.1	46.8	0.90
1,3-Dichlorobenzene	144	16.7	28.5	23.2	24.1	0.46
1,4-Dichlorobenzene	57.5	6.68	11.4	9.27	9.61	0.18
1,2-Dichlorobenzene	118	13.7	23.4	19.0	19.7	0.38
Total Dichlorobenzene	320	37.1	63.3	51.5	53.4	1.02
1,3,5-trichlorobenzene	13.0	1.51	2.57	2.10	2.17	0.042
1,2,4-trichlorobenzene	32.8	3.81	6.49	5.29	5.48	0.11
1,2,3-trichlorobenzene	<12	<1.39	<2.38	<1.93	<2.00	<0.038
Total Trichlorobenzene	<57.8	<6.72	<11.4	<9.32	<9.66	<0.19
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.39	<2.38	<1.93	<2.00	<0.038
1,2,3,4-tetrachlorobenzene	<12	<1.39	<2.38	<1.93	<2.00	<0.038
Total Tetrachlorobenzene	<24.0	<2.79	<4.75	<3.87	<4.01	<0.077
Pentachlorobenzene	<12	<1.39	<2.38	<1.93	<2.00	<0.038
Hexachlorobenzene	<12	<1.39	<2.38	<1.93	<2.00	<0.038
Total Chlorobenzenes	<705	<82.0	<140	<114	<118	<2.26

Dry Gas Volume Sampled (Rm^3*) :	5.051
Actual Flowrate (m^3/s) :	27.6
Dry Reference Flowrate (Rm^3/s*) :	16.2
Dry Adjusted Flowrate (Rm^3/s**) :	19.9
Wet Reference Flowrate (Rm^3/s*) :	19.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 54
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Actual Concentrations for Chlorobenzenes

Specific Isomer	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Monochlorobenzene	26.8	NQ	32.5	29.7	58.5
1,3-Dichlorobenzene	13.4	19.5	16.7	16.5	18.3
1,4-Dichlorobenzene	7.38	8.89	6.68	7.65	14.7
1,2-Dichlorobenzene	14.1	14.7	13.7	14.2	3.3
Total Dichlorobenzene	34.9	43.0	37.1	38.3	10.9
1,3,5-trichlorobenzene	1.70	1.88	1.51	1.69	10.8
1,2,4-trichlorobenzene	3.87	3.93	3.81	3.87	1.5
1,2,3-trichlorobenzene	<1.42	1.45	<1.39	<1.42	2.1
Total Trichlorobenzene	<6.99	7.26	<6.72	<6.99	3.9
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.42	<1.41	<1.39	<1.41	1.1
1,2,3,4-tetrachlorobenzene	<1.42	<1.41	<1.39	<1.41	1.1
Total Tetrachlorobenzene	<2.85	<2.81	<2.79	<2.82	1.1
Pentachlorobenzene	<1.42	<1.41	<1.39	<1.41	1.1
Hexachlorobenzene	<1.42	<1.41	<1.39	<1.41	1.1
Total Chlorobenzenes	<74.4	<55.9	<82.0	<70.8	19.0

TABLE 55
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dry Reference Concentrations for Chlorobenzenes

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Monochlorobenzene	45.1	NQ	55.4	50.3	58.6
1,3-Dichlorobenzene	22.5	32.8	28.5	27.9	18.4
1,4-Dichlorobenzene	12.4	15.0	11.4	12.9	14.2
1,2-Dichlorobenzene	23.7	24.7	23.4	23.9	2.8
Total Dichlorobenzene	58.7	72.4	63.3	64.8	10.8
1,3,5-trichlorobenzene	2.85	3.16	2.57	2.86	10.2
1,2,4-trichlorobenzene	6.50	6.61	6.49	6.54	1.0
1,2,3-trichlorobenzene	<2.39	2.45	<2.38	<2.41	1.5
Total Trichlorobenzene	<11.7	12.2	<11.4	<11.8	3.3
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<2.39	<2.37	<2.38	<2.38	0.6
1,2,3,4-tetrachlorobenzene	<2.39	<2.37	<2.38	<2.38	0.6
Total Tetrachlorobenzene	<4.79	<4.74	<4.75	<4.76	0.6
Pentachlorobenzene	<2.39	<2.37	<2.38	<2.38	0.6
Hexachlorobenzene	<2.39	<2.37	<2.38	<2.38	0.6
Total Chlorobenzenes	<125	<94.1	<140	<120	19.5

* At 25°C and 1 atmosphere

TABLE 56
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dry Adjusted Concentrations for Chlorobenzenes

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation %
	Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	
Monochlorobenzene	37.3	NQ	45.1	41.2	58.5
1,3-Dichlorobenzene	18.7	26.9	23.2	22.9	18.0
1,4-Dichlorobenzene	10.3	12.3	9.27	10.6	14.4
1,2-Dichlorobenzene	19.6	20.2	19.0	19.6	3.1
Total Dichlorobenzene	48.6	59.3	51.5	53.1	10.5
1,3,5-trichlorobenzene	2.36	2.59	2.10	2.35	10.5
1,2,4-trichlorobenzene	5.38	5.42	5.29	5.36	1.3
1,2,3-trichlorobenzene	<1.98	2.01	<1.93	<1.97	1.9
Total Trichlorobenzene	<9.72	10.0	<9.32	<9.68	3.6
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.98	<1.94	<1.93	<1.95	1.3
1,2,3,4-tetrachlorobenzene	<1.98	<1.94	<1.93	<1.95	1.3
Total Tetrachlorobenzene	<3.96	<3.88	<3.87	<3.90	1.3
Pentachlorobenzene	<1.98	<1.94	<1.93	<1.95	1.3
Hexachlorobenzene	<1.98	<1.94	<1.93	<1.95	1.3
Total Chlorobenzenes	<104	<77.1	<114	<98.1	19.2

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 57
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Wet Reference Concentrations for Chlorobenzenes

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Monochlorobenzene	38.3	NQ	46.8	42.5	58.6
1,3-Dichlorobenzene	19.1	27.8	24.1	23.7	18.4
1,4-Dichlorobenzene	10.5	12.7	9.61	10.9	14.6
1,2-Dichlorobenzene	20.2	21.0	19.7	20.3	3.1
Total Dichlorobenzene	49.8	61.5	53.4	54.9	10.9
1,3,5-trichlorobenzene	2.42	2.68	2.17	2.43	10.5
1,2,4-trichlorobenzene	5.52	5.62	5.48	5.54	1.3
1,2,3-trichlorobenzene	<2.03	2.08	<2.00	<2.04	1.8
Total Trichlorobenzene	<9.97	10.4	<9.66	<10.0	3.6
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<2.03	<2.01	<2.00	<2.02	0.7
1,2,3,4-tetrachlorobenzene	<2.03	<2.01	<2.00	<2.02	0.7
Total Tetrachlorobenzene	<4.06	<4.02	<4.01	<4.03	0.7
Pentachlorobenzene	<2.03	<2.01	<2.00	<2.02	0.7
Hexachlorobenzene	<2.03	<2.01	<2.00	<2.02	0.7
Total Chlorobenzenes	<106	<79.9	<118	<101	19.2

* At 25°C and 1 atmosphere

TABLE 58
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Rates for Chlorobenzenes

Specific Isomer	Emission Rate Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
Monochlorobenzene	0.73	NQ	0.90	0.82	58.6
1,3-Dichlorobenzene	0.37	0.54	0.46	0.46	18.7
1,4-Dichlorobenzene	0.20	0.25	0.18	0.21	14.9
1,2-Dichlorobenzene	0.39	0.40	0.38	0.39	3.4
Total Dichlorobenzene	0.96	1.19	1.02	1.06	11.2
1,3,5-trichlorobenzene	0.046	0.052	0.042	0.047	10.8
1,2,4-trichlorobenzene	0.11	0.11	0.11	0.11	1.6
1,2,3-trichlorobenzene	<0.039	0.040	<0.038	<0.039	2.1
Total Trichlorobenzene	<0.19	0.20	<0.19	<0.19	3.9
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<0.039	<0.039	<0.038	<0.039	0.7
1,2,3,4-tetrachlorobenzene	<0.039	<0.039	<0.038	<0.039	0.7
Total Tetrachlorobenzene	<0.078	<0.078	<0.077	<0.078	0.7
Pentachlorobenzene	<0.039	<0.039	<0.038	<0.039	0.7
Hexachlorobenzene	<0.039	<0.039	<0.038	<0.039	0.7
Total Chlorobenzenes	<2.04	<1.54	<2.26	<1.95	18.9

TABLE 59
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Emission Data for Chlorobenzenes

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Monochlorobenzene	29.7	50.3	41.2	42.5	0.82
1,3-Dichlorobenzene	16.5	27.9	22.9	23.7	0.46
1,4-Dichlorobenzene	7.65	12.9	10.6	10.9	0.21
1,2-Dichlorobenzene	14.2	23.9	19.6	20.3	0.39
Total Dichlorobenzene	38.3	64.8	53.1	54.9	1.06
1,3,5-trichlorobenzene	1.69	2.86	2.35	2.43	0.047
1,2,4-trichlorobenzene	3.87	6.54	5.36	5.54	0.11
1,2,3-trichlorobenzene	<1.42	<2.41	<1.97	<2.04	<0.039
Total Trichlorobenzene	<6.99	<11.8	<9.68	<10.0	<0.19
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.41	<2.38	<1.95	<2.02	<0.039
1,2,3,4-tetrachlorobenzene	<1.41	<2.38	<1.95	<2.02	<0.039
Total Tetrachlorobenzene	<2.82	<4.76	<3.90	<4.03	<0.078
Pentachlorobenzene	<1.41	<2.38	<1.95	<2.02	<0.039
Hexachlorobenzene	<1.41	<2.38	<1.95	<2.02	<0.039
Total Chlorobenzenes	<70.8	<120	<98.1	<101	<1.95

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 60
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorobenzene Blank Analyses

Isomers and Congener Group Totals	Blank Train Total ng	Laboratory Blank Total ng
Monochlorobenzene	NQ	<12
1,3-Dichlorobenzene	<12	<12
1,4-Dichlorobenzene	63.7	53.4
1,2-Dichlorobenzene	<12	<12
Total Dichlorobenzene	<87.7	<77.4
1,3,5-trichlorobenzene	<12	<12
1,2,4-trichlorobenzene	<12	<12
1,2,3-trichlorobenzene	<12	<12
Total Trichlorobenzene	<36.0	<36.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<12
1,2,3,4-tetrachlorobenzene	<12	<12
Total Tetrachlorobenzene	<24.0	<24.0
Pentachlorobenzene	<12	<12
Hexachlorobenzene	<12	<12
Total Chlorobenzenes	<172	<173

"<" indicates that the amount detected is less than the detection limit. In these cases the value of the detection limit was used to calculate the total collected.

"NQ" indcates that the compound could not be quantified by the analytical laboratory.

TABLE 61
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 1

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<60	<7.12	<12.0	<9.90	<10.2	<0.20
3-monochlorophenol	<60	<7.12	<12.0	<9.90	<10.2	<0.20
4-monochlorophenol	<60	<7.12	<12.0	<9.90	<10.2	<0.20
Total Monochlorophenols	<180	<21.4	<35.9	<29.7	<30.5	<0.59
2,6-dichlorophenol	<60	<7.12	<12.0	<9.90	<10.2	<0.20
2,4 & 2,5-dichlorophenol	<60	<7.12	<12.0	<9.90	<10.2	<0.20
3,5-dichlorophenol	<60	<7.12	<12.0	<9.90	<10.2	<0.20
2,3-dichlorophenol	<60	<7.12	<12.0	<9.90	<10.2	<0.20
3,4-dichlorophenol	<60	<7.12	<12.0	<9.90	<10.2	<0.20
Total Dichlorophenols	<300	<35.6	<59.8	<49.5	<50.8	<0.98
2,4,6-trichlorophenol	<60	<7.12	<12.0	<9.90	<10.2	<0.20
2,3,6-trichlorophenol	<60	<7.12	<12.0	<9.90	<10.2	<0.20
2,3,5-trichlorophenol	<60	<7.12	<12.0	<9.90	<10.2	<0.20
2,4,5-trichlorophenol	<60	<7.12	<12.0	<9.90	<10.2	<0.20
2,3,4-trichlorophenol	<60	<7.12	<12.0	<9.90	<10.2	<0.20
3,4,5-trichlorophenol	<60	<7.12	<12.0	<9.90	<10.2	<0.20
Total Trichlorophenols	<360	<42.7	<71.8	<59.4	<61.0	<1.17
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.12	<12.0	<9.90	<10.2	<0.20
2,3,4,5-tetrachlorophenol	<60	<7.12	<12.0	<9.90	<10.2	<0.20
Total Tetrachlorophenols	<120	<14.2	<23.9	<19.8	<20.3	<0.39
Pentachlorophenol	<60	<7.12	<12.0	<9.90	<10.2	<0.20
Total Chlorophenols	<1020	<121	<203	<168	<173	<3.32

Dry Gas Volume Sampled (Rm^3*) :	5.013
Actual Flowrate (m^3/s) :	27.4
Dry Reference Flowrate (Rm^3/s*) :	16.3
Dry Adjusted Flowrate (Rm^3/s**) :	19.7
Wet Reference Flowrate (Rm^3/s*) :	19.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 62
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 2

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<60	<7.03	<11.8	<9.71	<10.1	<0.19
3-monochlorophenol	<60	<7.03	<11.8	<9.71	<10.1	<0.19
4-monochlorophenol	<60	<7.03	<11.8	<9.71	<10.1	<0.19
Total Monochlorophenols	<180	<21.1	<35.5	<29.1	<30.2	<0.58
2,6-dichlorophenol	<60	<7.03	<11.8	<9.71	<10.1	<0.19
2,4 & 2,5-dichlorophenol	<60	<7.03	<11.8	<9.71	<10.1	<0.19
3,5-dichlorophenol	<60	<7.03	<11.8	<9.71	<10.1	<0.19
2,3-dichlorophenol	<60	<7.03	<11.8	<9.71	<10.1	<0.19
3,4-dichlorophenol	<60	<7.03	<11.8	<9.71	<10.1	<0.19
Total Dichlorophenols	<300	<35.2	<59.2	<48.5	<50.3	<0.97
2,4,6-trichlorophenol	<60	<7.03	<11.8	<9.71	<10.1	<0.19
2,3,6-trichlorophenol	<60	<7.03	<11.8	<9.71	<10.1	<0.19
2,3,5-trichlorophenol	<60	<7.03	<11.8	<9.71	<10.1	<0.19
2,4,5-trichlorophenol	<60	<7.03	<11.8	<9.71	<10.1	<0.19
2,3,4-trichlorophenol	<60	<7.03	<11.8	<9.71	<10.1	<0.19
3,4,5-trichlorophenol	<60	<7.03	<11.8	<9.71	<10.1	<0.19
Total Trichlorophenols	<360	<42.2	<71.0	<58.2	<60.4	<1.16
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.03	<11.8	<9.71	<10.1	<0.19
2,3,4,5-tetrachlorophenol	<60	<7.03	<11.8	<9.71	<10.1	<0.19
Total Tetrachlorophenols	<120	<14.1	<23.7	<19.4	<20.1	<0.39
Pentachlorophenol	<60	<7.03	<11.8	<9.71	<10.1	<0.19
Total Chlorophenols	<1020	<120	<201	<165	<171	<3.30

Dry Gas Volume Sampled (Rm^3*) :	5.068
Actual Flowrate (m^3/s) :	27.6
Dry Reference Flowrate (Rm^3/s*) :	16.4
Dry Adjusted Flowrate (Rm^3/s**) :	20.0
Wet Reference Flowrate (Rm^3/s*) :	19.3

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 63
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 3

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
2-monochlorophenol	<60	<6.97	<11.9	<9.67	<10.0	<0.19
3-monochlorophenol	<60	<6.97	<11.9	<9.67	<10.0	<0.19
4-monochlorophenol	<60	<6.97	<11.9	<9.67	<10.0	<0.19
Total Monochlorophenols	<180	<20.9	<35.6	<29.0	<30.1	<0.58
2,6-dichlorophenol	<60	<6.97	<11.9	<9.67	<10.0	<0.19
2,4 & 2,5-dichlorophenol	<60	<6.97	<11.9	<9.67	<10.0	<0.19
3,5-dichlorophenol	<60	<6.97	<11.9	<9.67	<10.0	<0.19
2,3-dichlorophenol	<60	<6.97	<11.9	<9.67	<10.0	<0.19
3,4-dichlorophenol	<60	<6.97	<11.9	<9.67	<10.0	<0.19
Total Dichlorophenols	<300	<34.9	<59.4	<48.4	<50.1	<0.96
2,4,6-trichlorophenol	<60	<6.97	<11.9	<9.67	<10.0	<0.19
2,3,6-trichlorophenol	<60	<6.97	<11.9	<9.67	<10.0	<0.19
2,3,5-trichlorophenol	<60	<6.97	<11.9	<9.67	<10.0	<0.19
2,4,5-trichlorophenol	<60	<6.97	<11.9	<9.67	<10.0	<0.19
2,3,4-trichlorophenol	<60	<6.97	<11.9	<9.67	<10.0	<0.19
3,4,5-trichlorophenol	<60	<6.97	<11.9	<9.67	<10.0	<0.19
Total Trichlorophenols	<360	<41.8	<71.3	<58.0	<60.1	<1.15
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<6.97	<11.9	<9.67	<10.0	<0.19
2,3,4,5-tetrachlorophenol	<60	<6.97	<11.9	<9.67	<10.0	<0.19
Total Tetrachlorophenols	<120	<13.9	<23.8	<19.3	<20.0	<0.38
Pentachlorophenol	<60	<6.97	<11.9	<9.67	<10.0	<0.19
Total Chlorophenols	<1020	<119	<202	<164	<170	<3.27

Dry Gas Volume Sampled (Rm^3*) :	5.051
Actual Flowrate (m^3/s) :	27.6
Dry Reference Flowrate (Rm^3/s*) :	16.2
Dry Adjusted Flowrate (Rm^3/s**) :	19.9
Wet Reference Flowrate (Rm^3/s*) :	19.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 64
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Actual Concentrations

Specific Isomer	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
2-monochlorophenol	<7.12	<7.03	<6.97	<7.04	1.1
3-monochlorophenol	<7.12	<7.03	<6.97	<7.04	1.1
4-monochlorophenol	<7.12	<7.03	<6.97	<7.04	1.1
Total Monochlorophenols	<21.4	<21.1	<20.9	<21.1	1.1
2,6-dichlorophenol	<7.12	<7.03	<6.97	<7.04	1.1
2,4 & 2,5-dichlorophenol	<7.12	<7.03	<6.97	<7.04	1.1
3,5-dichlorophenol	<7.12	<7.03	<6.97	<7.04	1.1
2,3-dichlorophenol	<7.12	<7.03	<6.97	<7.04	1.1
3,4-dichlorophenol	<7.12	<7.03	<6.97	<7.04	1.1
Total Dichlorophenols	<35.6	<35.2	<34.9	<35.2	1.1
2,4,6-trichlorophenol	<7.12	<7.03	<6.97	<7.04	1.1
2,3,6-trichlorophenol	<7.12	<7.03	<6.97	<7.04	1.1
2,3,5-trichlorophenol	<7.12	<7.03	<6.97	<7.04	1.1
2,4,5-trichlorophenol	<7.12	<7.03	<6.97	<7.04	1.1
2,3,4-trichlorophenol	<7.12	<7.03	<6.97	<7.04	1.1
3,4,5-trichlorophenol	<7.12	<7.03	<6.97	<7.04	1.1
Total Trichlorophenols	<42.7	<42.2	<41.8	<42.3	1.1
2,3,5,6/2,3,4,6-tetrachlorophenol	<7.12	<7.03	<6.97	<7.04	1.1
2,3,4,5-tetrachlorophenol	<7.12	<7.03	<6.97	<7.04	1.1
Total Tetrachlorophenols	<14.2	<14.1	<13.9	<14.1	1.1
Pentachlorophenol	<7.12	<7.03	<6.97	<7.04	1.1
Total Chlorophenols	<121	<120	<119	<120	1.1

TABLE 65
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<12.0	<11.8	<11.9	<11.9	0.6
3-monochlorophenol	<12.0	<11.8	<11.9	<11.9	0.6
4-monochlorophenol	<12.0	<11.8	<11.9	<11.9	0.6
Total Monochlorophenols	<35.9	<35.5	<35.6	<35.7	0.6
2,6-dichlorophenol	<12.0	<11.8	<11.9	<11.9	0.6
2,4 & 2,5-dichlorophenol	<12.0	<11.8	<11.9	<11.9	0.6
3,5-dichlorophenol	<12.0	<11.8	<11.9	<11.9	0.6
2,3-dichlorophenol	<12.0	<11.8	<11.9	<11.9	0.6
3,4-dichlorophenol	<12.0	<11.8	<11.9	<11.9	0.6
Total Dichlorophenols	<59.8	<59.2	<59.4	<59.5	0.6
2,4,6-trichlorophenol	<12.0	<11.8	<11.9	<11.9	0.6
2,3,6-trichlorophenol	<12.0	<11.8	<11.9	<11.9	0.6
2,3,5-trichlorophenol	<12.0	<11.8	<11.9	<11.9	0.6
2,4,5-trichlorophenol	<12.0	<11.8	<11.9	<11.9	0.6
2,3,4-trichlorophenol	<12.0	<11.8	<11.9	<11.9	0.6
3,4,5-trichlorophenol	<12.0	<11.8	<11.9	<11.9	0.6
Total Trichlorophenols	<71.8	<71.0	<71.3	<71.4	0.6
2,3,5,6/2,3,4,6-tetrachlorophenol	<12.0	<11.8	<11.9	<11.9	0.6
2,3,4,5-tetrachlorophenol	<12.0	<11.8	<11.9	<11.9	0.6
Total Tetrachlorophenols	<23.9	<23.7	<23.8	<23.8	0.6
Pentachlorophenol	<12.0	<11.8	<11.9	<11.9	0.6
Total Chlorophenols	<203	<201	<202	<202	0.6

* At 25°C and 1 atmosphere

TABLE 66
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<9.90	<9.71	<9.67	<9.76	1.3
3-monochlorophenol	<9.90	<9.71	<9.67	<9.76	1.3
4-monochlorophenol	<9.90	<9.71	<9.67	<9.76	1.3
Total Monochlorophenols	<29.7	<29.1	<29.0	<29.3	1.3
2,6-dichlorophenol	<9.90	<9.71	<9.67	<9.76	1.3
2,4 & 2,5-dichlorophenol	<9.90	<9.71	<9.67	<9.76	1.3
3,5-dichlorophenol	<9.90	<9.71	<9.67	<9.76	1.3
2,3-dichlorophenol	<9.90	<9.71	<9.67	<9.76	1.3
3,4-dichlorophenol	<9.90	<9.71	<9.67	<9.76	1.3
Total Dichlorophenols	<49.5	<48.5	<48.4	<48.8	1.3
2,4,6-trichlorophenol	<9.90	<9.71	<9.67	<9.76	1.3
2,3,6-trichlorophenol	<9.90	<9.71	<9.67	<9.76	1.3
2,3,5-trichlorophenol	<9.90	<9.71	<9.67	<9.76	1.3
2,4,5-trichlorophenol	<9.90	<9.71	<9.67	<9.76	1.3
2,3,4-trichlorophenol	<9.90	<9.71	<9.67	<9.76	1.3
3,4,5-trichlorophenol	<9.90	<9.71	<9.67	<9.76	1.3
Total Trichlorophenols	<59.4	<58.2	<58.0	<58.6	1.3
2,3,5,6/2,3,4,6-tetrachlorophenol	<9.90	<9.71	<9.67	<9.76	1.3
2,3,4,5-tetrachlorophenol	<9.90	<9.71	<9.67	<9.76	1.3
Total Tetrachlorophenols	<19.8	<19.4	<19.3	<19.5	1.3
Pentachlorophenol	<9.90	<9.71	<9.67	<9.76	1.3
Total Chlorophenols	<168	<165	<164	<166	1.3

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 67
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<10.2	<10.1	<10.0	<10.1	0.7
3-monochlorophenol	<10.2	<10.1	<10.0	<10.1	0.7
4-monochlorophenol	<10.2	<10.1	<10.0	<10.1	0.7
Total Monochlorophenols	<30.5	<30.2	<30.1	<30.2	0.7
2,6-dichlorophenol	<10.2	<10.1	<10.0	<10.1	0.7
2,4 & 2,5-dichlorophenol	<10.2	<10.1	<10.0	<10.1	0.7
3,5-dichlorophenol	<10.2	<10.1	<10.0	<10.1	0.7
2,3-dichlorophenol	<10.2	<10.1	<10.0	<10.1	0.7
3,4-dichlorophenol	<10.2	<10.1	<10.0	<10.1	0.7
Total Dichlorophenols	<50.8	<50.3	<50.1	<50.4	0.7
2,4,6-trichlorophenol	<10.2	<10.1	<10.0	<10.1	0.7
2,3,6-trichlorophenol	<10.2	<10.1	<10.0	<10.1	0.7
2,3,5-trichlorophenol	<10.2	<10.1	<10.0	<10.1	0.7
2,4,5-trichlorophenol	<10.2	<10.1	<10.0	<10.1	0.7
2,3,4-trichlorophenol	<10.2	<10.1	<10.0	<10.1	0.7
3,4,5-trichlorophenol	<10.2	<10.1	<10.0	<10.1	0.7
Total Trichlorophenols	<61.0	<60.4	<60.1	<60.5	0.7
2,3,5,6/2,3,4,6-tetrachlorophenol	<10.2	<10.1	<10.0	<10.1	0.7
2,3,4,5-tetrachlorophenol	<10.2	<10.1	<10.0	<10.1	0.7
Total Tetrachlorophenols	<20.3	<20.1	<20.0	<20.2	0.7
Pentachlorophenol	<10.2	<10.1	<10.0	<10.1	0.7
Total Chlorophenols	<173	<171	<170	<171	0.7

* At 25°C and 1 atmosphere

TABLE 68
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Emission Rates

Specific Isomer	Emission Rate				Coefficient of Variation
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	%
2-monochlorophenol	<0.20	<0.19	<0.19	<0.19	0.7
3-monochlorophenol	<0.20	<0.19	<0.19	<0.19	0.7
4-monochlorophenol	<0.20	<0.19	<0.19	<0.19	0.7
Total Monochlorophenols	<0.59	<0.58	<0.58	<0.58	0.7
2,6-dichlorophenol	<0.20	<0.19	<0.19	<0.19	0.7
2,4 & 2,5-dichlorophenol	<0.20	<0.19	<0.19	<0.19	0.7
3,5-dichlorophenol	<0.20	<0.19	<0.19	<0.19	0.7
2,3-dichlorophenol	<0.20	<0.19	<0.19	<0.19	0.7
3,4-dichlorophenol	<0.20	<0.19	<0.19	<0.19	0.7
Total Dichlorophenols	<0.98	<0.97	<0.96	<0.97	0.7
2,4,6-trichlorophenol	<0.20	<0.19	<0.19	<0.19	0.7
2,3,6-trichlorophenol	<0.20	<0.19	<0.19	<0.19	0.7
2,3,5-trichlorophenol	<0.20	<0.19	<0.19	<0.19	0.7
2,4,5-trichlorophenol	<0.20	<0.19	<0.19	<0.19	0.7
2,3,4-trichlorophenol	<0.20	<0.19	<0.19	<0.19	0.7
3,4,5-trichlorophenol	<0.20	<0.19	<0.19	<0.19	0.7
Total Trichlorophenols	<1.17	<1.16	<1.15	<1.16	0.7
2,3,5,6/2,3,4,6-tetrachlorophenol	<0.20	<0.19	<0.19	<0.19	0.7
2,3,4,5-tetrachlorophenol	<0.20	<0.19	<0.19	<0.19	0.7
Total Tetrachlorophenols	<0.39	<0.39	<0.38	<0.39	0.7
Pentachlorophenol	<0.20	<0.19	<0.19	<0.19	0.7
Total Chlorophenols	<3.32	<3.30	<3.27	<3.30	0.7

TABLE 69
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Emission Data for Chlorophenol Isomer and Congener Groups

Specific Isomer	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	<7.04	<11.9	<9.76	<10.1	<0.19
3-monochlorophenol	<7.04	<11.9	<9.76	<10.1	<0.19
4-monochlorophenol	<7.04	<11.9	<9.76	<10.1	<0.19
Total Monochlorophenols	<21.1	<35.7	<29.3	<30.2	<0.58
2,6-dichlorophenol	<7.04	<11.9	<9.76	<10.1	<0.19
2,4 & 2,5-dichlorophenol	<7.04	<11.9	<9.76	<10.1	<0.19
3,5-dichlorophenol	<7.04	<11.9	<9.76	<10.1	<0.19
2,3-dichlorophenol	<7.04	<11.9	<9.76	<10.1	<0.19
3,4-dichlorophenol	<7.04	<11.9	<9.76	<10.1	<0.19
Total Dichlorophenols	<35.2	<59.5	<48.8	<50.4	<0.97
2,4,6-trichlorophenol	<7.04	<11.9	<9.76	<10.1	<0.19
2,3,6-trichlorophenol	<7.04	<11.9	<9.76	<10.1	<0.19
2,3,5-trichlorophenol	<7.04	<11.9	<9.76	<10.1	<0.19
2,4,5-trichlorophenol	<7.04	<11.9	<9.76	<10.1	<0.19
2,3,4-trichlorophenol	<7.04	<11.9	<9.76	<10.1	<0.19
3,4,5-trichlorophenol	<7.04	<11.9	<9.76	<10.1	<0.19
Total Trichlorophenols	<42.3	<71.4	<58.6	<60.5	<1.16
2,3,5,6/2,3,4,6-tetrachlorophenol	<7.04	<11.9	<9.76	<10.1	<0.19
2,3,4,5-tetrachlorophenol	<7.04	<11.9	<9.76	<10.1	<0.19
Total Tetrachlorophenols	<14.1	<23.8	<19.5	<20.2	<0.39
Pentachlorophenol	<7.04	<11.9	<9.76	<10.1	<0.19
Total Chlorophenols	<120	<202	<166	<171	<3.30

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 70
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Blank Analyses

Congener Group	Lab Blank Total ng	Blank Train Total ng
2-monochlorophenol	<60	<60
3-monochlorophenol	<60	<60
4-monochlorophenol	<60	<60
Total Monochlorophenols	<180	<180
2,6-dichlorophenol	<60	<60
2,4 & 2,5-dichlorophenol	<60	<60
3,5-dichlorophenol	<60	<60
2,3-dichlorophenol	<60	<60
3,4-dichlorophenol	<60	<60
Total Dichlorophenols	<300	<300
2,4,6-trichlorophenol	<60	<60
2,3,6-trichlorophenol	<60	<60
2,3,5-trichlorophenol	<60	<60
2,4,5-trichlorophenol	<60	<60
2,3,4-trichlorophenol	<60	<60
3,4,5-trichlorophenol	<60	<60
Total Trichlorophenols	<360	<360
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<60
2,3,4,5-tetrachlorophenol	<60	<60
Total Tetrachlorophenols	<120	<120
Pentachlorophenol	<60	<60
Total Chlorophenols	<1020	<1020

"<" indicates that the amount detected is less than the detection limit. In these cases the value of the detection limit was used to calculate the total collected.

TABLE 71
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 1

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	<12	<1.42	<2.39	<1.98	<2.03	<0.039
Acenaphthylene	<12	<1.42	<2.39	<1.98	<2.03	<0.039
Anthracene	<12	<1.42	<2.39	<1.98	<2.03	<0.039
Benzo(a)Anthracene	<12	<1.42	<2.39	<1.98	<2.03	<0.039
Benzo(b)Fluoranthene	<12	<1.42	<2.39	<1.98	<2.03	<0.039
Benzo(k)Fluoranthene	<12	<1.42	<2.39	<1.98	<2.03	<0.039
Benzo(a)fluorene	<12	<1.42	<2.39	<1.98	<2.03	<0.039
Benzo(b)fluorene	<12	<1.42	<2.39	<1.98	<2.03	<0.039
Benzo(g,h,i)Perylene	57.0	6.76	11.4	9.41	9.65	0.19
Benzo(a)Pyrene	<12	<1.42	<2.39	<1.98	<2.03	<0.039
Benzo(e)Pyrene	<12	<1.42	<2.39	<1.98	<2.03	<0.039
Biphenyl	25.9	3.07	5.17	4.27	4.39	0.084
2-Chloronaphthalene	<12	<1.42	<2.39	<1.98	<2.03	<0.039
Chrysene/Triphenylene	<12	<1.42	<2.39	<1.98	<2.03	<0.039
Coronene	69.7	8.27	13.9	11.5	11.8	0.23
Dibenzo(a,c/a,h)Anthracene	<12	<1.42	<2.39	<1.98	<2.03	<0.039
Dibenzo(a,e)pyrene	<60	<7.12	<12.0	<9.90	<10.2	<0.20
9,10-dimethylanthracene	<12	<1.42	<2.39	<1.98	<2.03	<0.039
7,12-Dimethylbenzo(a)anthracene	<12	<1.42	<2.39	<1.98	<2.03	<0.039
Fluoranthene	36.8	4.37	7.34	6.07	6.23	0.12
Fluorene	14.9	1.77	2.97	2.46	2.52	0.048
Indeno(1,2,3-cd)Pyrene	<12	<1.42	<2.39	<1.98	<2.03	<0.039
2-methylanthracene	32.2	3.82	6.42	5.31	5.45	0.10
3-Methylcholanthrene	<60	<7.12	<12.0	<9.90	<10.2	<0.20
1-Methylnaphthalene	22.3	2.65	4.45	3.68	3.78	0.073
2-Methylnaphthalene	39.6	4.70	7.90	6.54	6.71	0.13
1-Methylphenanthrene	<12	<1.42	<2.39	<1.98	<2.03	<0.039
9-Methylphenanthrene	15.4	1.83	3.07	2.54	2.61	0.050
Naphthalene	134	15.9	26.7	22.1	22.7	0.44
Perylene	<12	<1.42	<2.39	<1.98	<2.03	<0.039
Phenanthrene	114	13.5	22.7	18.8	19.3	0.37
Picene	<60	<7.12	<12.0	<9.90	<10.2	<0.20
Pyrene	50.9	6.04	10.2	8.40	8.62	0.17
Tetralin	34.3	4.07	6.84	5.66	5.81	0.11
m-terphenyl	<12	<1.42	<2.39	<1.98	<2.03	<0.039
o-Terphenyl	<12	<1.42	<2.39	<1.98	<2.03	<0.039
p-terphenyl	<12	<1.42	<2.39	<1.98	<2.03	<0.039
Total	<1079	<128	<215	<178	<183	<3.51

Dry Gas Volume Sampled (Rm³*) :	5.013
Actual Flowrate (m³/s) :	27.4
Dry Reference Flowrate (Rm³/s*) :	16.3
Dry Adjusted Flowrate (Rm³/s**) :	19.7
Wet Reference Flowrate (Rm³/s*) :	19.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 72
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 2

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	<12	<1.41	<2.37	<1.94	<2.01	<0.039
Acenaphthylene	<12	<1.41	<2.37	<1.94	<2.01	<0.039
Anthracene	<12	<1.41	<2.37	<1.94	<2.01	<0.039
Benzo(a)Anthracene	<12	<1.41	<2.37	<1.94	<2.01	<0.039
Benzo(b)Fluoranthene	<12	<1.41	<2.37	<1.94	<2.01	<0.039
Benzo(k)Fluoranthene	<12	<1.41	<2.37	<1.94	<2.01	<0.039
Benzo(a)fluorene	<12	<1.41	<2.37	<1.94	<2.01	<0.039
Benzo(b)fluorene	<12	<1.41	<2.37	<1.94	<2.01	<0.039
Benzo(g,h,i)Perylene	<12	<1.41	<2.37	<1.94	<2.01	<0.039
Benzo(a)Pyrene	<12	<1.41	<2.37	<1.94	<2.01	<0.039
Benzo(e)Pyrene	<12	<1.41	<2.37	<1.94	<2.01	<0.039
Biphenyl	38.3	4.49	7.56	6.20	6.42	0.12
2-Chloronaphthalene	<12	<1.41	<2.37	<1.94	<2.01	<0.039
Chrysene/Triphenylene	<12	<1.41	<2.37	<1.94	<2.01	<0.039
Coronene	<60	<7.03	<11.8	<9.71	<10.1	<0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.41	<2.37	<1.94	<2.01	<0.039
Dibenzo(a,e)pyrene	<60	<7.03	<11.8	<9.71	<10.1	<0.19
9,10-dimethylanthracene	21.2	2.49	4.18	3.43	3.55	0.069
7,12-Dimethylbenzo(a)anthracene	<12	<1.41	<2.37	<1.94	<2.01	<0.039
Fluoranthene	49.0	5.75	9.67	7.93	8.22	0.16
Fluorene	18.6	2.18	3.67	3.01	3.12	0.060
Indeno(1,2,3-cd)Pyrene	<12	<1.41	<2.37	<1.94	<2.01	<0.039
2-methylanthracene	35.8	4.20	7.06	5.79	6.00	0.12
3-Methylcholanthrene	<60	<7.03	<11.8	<9.71	<10.1	<0.19
1-Methylnaphthalene	47.6	5.58	9.39	7.70	7.98	0.15
2-Methylnaphthalene	85.7	10.0	16.9	13.9	14.4	0.28
1-Methylphenanthrene	<12	<1.41	<2.37	<1.94	<2.01	<0.039
9-Methylphenanthrene	15.9	1.86	3.14	2.57	2.67	0.051
Naphthalene	252	29.5	49.7	40.8	42.3	0.82
Perylene	<12	<1.41	<2.37	<1.94	<2.01	<0.039
Phenanthrene	133	15.6	26.2	21.5	22.3	0.43
Picene	<60	<7.03	<11.8	<9.7	<10.1	<0.19
Pyrene	50.9	5.97	10.0	8.24	8.53	0.16
Tetralin	91.7	10.8	18.1	14.8	15.4	0.30
m-terphenyl	<12	<1.41	<2.37	<1.94	<2.01	<0.039
o-Terphenyl	<12	<1.41	<2.37	<1.94	<2.01	<0.039
p-terphenyl	<12	<1.41	<2.37	<1.94	<2.01	<0.039
Total	<1332	<156	<263	<215	<223	<4.31

Dry Gas Volume Sampled (Rm^3*) :	5.068
Actual Flowrate (m^3/s) :	27.6
Dry Reference Flowrate (Rm^3/s*) :	16.4
Dry Adjusted Flowrate (Rm^3/s**) :	20.0
Wet Reference Flowrate (Rm^3/s*) :	19.3

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 73
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 3

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	<12	<1.39	<2.38	<1.93	<2.00	<0.038
Acenaphthylene	<12	<1.39	<2.38	<1.93	<2.00	<0.038
Anthracene	<12	<1.39	<2.38	<1.93	<2.00	<0.038
Benzo(a)Anthracene	<12	<1.39	<2.38	<1.93	<2.00	<0.038
Benzo(b)Fluoranthene	<12	<1.39	<2.38	<1.93	<2.00	<0.038
Benzo(k)Fluoranthene	<12	<1.39	<2.38	<1.93	<2.00	<0.038
Benzo(a)fluorene	<12	<1.39	<2.38	<1.93	<2.00	<0.038
Benzo(b)fluorene	<12	<1.39	<2.38	<1.93	<2.00	<0.038
Benzo(g,h,i)Perylene	43.7	5.08	8.65	7.04	7.30	0.14
Benzo(a)Pyrene	<12	<1.39	<2.38	<1.93	<2.00	<0.038
Benzo(e)Pyrene	13.5	1.57	2.67	2.18	2.26	0.043
Biphenyl	37.0	4.30	7.33	5.96	6.18	0.12
2-Chloronaphthalene	<12	<1.39	<2.38	<1.93	<2.00	<0.038
Chrysene/Triphenylene	<12	<1.39	<2.38	<1.93	<2.00	<0.038
Coronene	<60	<6.97	<11.9	<9.67	<10.0	<0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.39	<2.38	<1.93	<2.00	<0.038
Dibenzo(a,e)pyrene	<60	<6.97	<11.9	<9.67	<10.0	<0.19
9,10-dimethylanthracene	<12	<1.39	<2.38	<1.93	<2.00	<0.038
7,12-Dimethylbenzo(a)anthracene	<12	<1.39	<2.38	<1.93	<2.00	<0.038
Fluoranthene	38.2	4.44	7.56	6.16	6.38	0.12
Fluorene	15.9	1.85	3.15	2.56	2.66	0.051
Indeno(1,2,3-cd)Pyrene	<12	<1.39	<2.38	<1.93	<2.00	<0.038
2-methylanthracene	62.9	7.31	12.5	10.1	10.5	0.20
3-Methylcholanthrene	<60	<6.97	<11.9	<9.67	<10.0	<0.19
1-Methylnaphthalene	30.9	3.59	6.12	4.98	5.16	0.099
2-Methylnaphthalene	61.3	7.12	12.1	9.88	10.2	0.20
1-Methylphenanthrene	<12	<1.39	<2.38	<1.93	<2.00	<0.038
9-Methylphenanthrene	27.6	3.21	5.46	4.45	4.61	0.089
Naphthalene	203	23.6	40.2	32.7	33.9	0.65
Perylene	<12	<1.39	<2.38	<1.93	<2.00	<0.038
Phenanthrene	192	22.3	38.0	30.9	32.1	0.62
Picene	<60	<6.97	<11.9	<9.67	<10.0	<0.19
Pyrene	43.6	5.07	8.63	7.03	7.28	0.14
Tetralin	43.3	5.03	8.57	6.98	7.23	0.14
m-terphenyl	<12	<1.39	<2.38	<1.93	<2.00	<0.038
o-Terphenyl	<12	<1.39	<2.38	<1.93	<2.00	<0.038
p-terphenyl	<12	<1.39	<2.38	<1.93	<2.00	<0.038
Total	<1293	<150	<256	<208	<216	<4.15

Dry Gas Volume Sampled (Rm³*) :	5.051
Actual Flowrate (m³/s) :	27.6
Dry Reference Flowrate (Rm³/s*) :	16.2
Dry Adjusted Flowrate (Rm³/s**) :	19.9
Wet Reference Flowrate (Rm³/s*) :	19.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 74
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Actual Concentrations

Compound	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Acenaphthene	<1.42	<1.41	<1.39	<1.41	1.1
Acenaphthylene	<1.42	<1.41	<1.39	<1.41	1.1
Anthracene	<1.42	<1.41	<1.39	<1.41	1.1
Benzo(a)Anthracene	<1.42	<1.41	<1.39	<1.41	1.1
Benzo(b)Fluoranthene	<1.42	<1.41	<1.39	<1.41	1.1
Benzo(k)Fluoranthene	<1.42	<1.41	<1.39	<1.41	1.1
Benzo(a)fluorene	<1.42	<1.41	<1.39	<1.41	1.1
Benzo(b)fluorene	<1.42	<1.41	<1.39	<1.41	1.1
Benzo(g,h,i)Perylene	6.76	<1.41	5.08	<4.42	62.0
Benzo(a)Pyrene	<1.42	<1.41	<1.39	<1.41	1.1
Benzo(e)Pyrene	<1.42	<1.41	1.57	<1.47	6.1
Biphenyl	3.07	4.49	4.30	3.95	19.4
2-Chloronaphthalene	<1.42	<1.41	<1.39	<1.41	1.1
Chrysene/Triphenylene	<1.42	<1.41	<1.39	<1.41	1.1
Coronene	8.27	<7.03	<6.97	<7.43	9.9
Dibenzo(a,c/a,h)Anthracene	<1.42	<1.41	<1.39	<1.41	1.1
Dibenzo(a,e)pyrene	<7.12	<7.03	<6.97	<7.04	1.1
9,10-dimethylanthracene	<1.42	2.49	<1.39	<1.77	35.2
7,12-Dimethylbenzo(a)anthracene	<1.42	<1.41	<1.39	<1.41	1.1
Fluoranthene	4.37	5.75	4.44	4.85	16.0
Fluorene	1.77	2.18	1.85	1.93	11.3
Indeno(1,2,3-cd)Pyrene	<1.42	<1.41	<1.39	<1.41	1.1
2-methylanthracene	3.82	4.20	7.31	5.11	37.5
3-Methylcholanthrene	<7.12	<7.03	<6.97	<7.04	1.1
1-Methylnaphthalene	2.65	5.58	3.59	3.94	38.0
2-Methylnaphthalene	4.70	10.0	7.12	7.29	36.7
1-Methylphenanthrene	<1.42	<1.41	<1.39	<1.41	1.1
9-Methylphenanthrene	1.83	1.86	3.21	2.30	34.2
Naphthalene	15.9	29.5	23.6	23.0	29.7
Perylene	<1.42	<1.41	<1.39	<1.41	1.1
Phenanthrene	13.5	15.6	22.3	17.1	26.8
Picene	<7.12	<7.03	<6.97	<7.04	1.1
Pyrene	6.04	5.97	5.07	5.69	9.5
Tetralin	4.07	10.8	5.03	6.62	54.6
m-terphenyl	<1.42	<1.41	<1.39	<1.41	1.1
o-Terphenyl	<1.42	<1.41	<1.39	<1.41	1.1
p-terphenyl	<1.42	<1.41	<1.39	<1.41	1.1
Total	<128	<156	<150	<145	10.2

TABLE 75
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Reference Concentrations

Compound	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<2.39	<2.37	<2.38	<2.38	0.6
Acenaphthylene	<2.39	<2.37	<2.38	<2.38	0.6
Anthracene	<2.39	<2.37	<2.38	<2.38	0.6
Benzo(a)Anthracene	<2.39	<2.37	<2.38	<2.38	0.6
Benzo(b)Fluoranthene	<2.39	<2.37	<2.38	<2.38	0.6
Benzo(k)Fluoranthene	<2.39	<2.37	<2.38	<2.38	0.6
Benzo(a)fluorene	<2.39	<2.37	<2.38	<2.38	0.6
Benzo(b)fluorene	<2.39	<2.37	<2.38	<2.38	0.6
Benzo(g,h,i)Perylene	11.4	<2.37	8.65	<7.46	61.9
Benzo(a)Pyrene	<2.39	<2.37	<2.38	<2.38	0.6
Benzo(e)Pyrene	<2.39	<2.37	2.67	<2.48	6.8
Biphenyl	5.17	7.56	7.33	6.68	19.7
2-Chloronaphthalene	<2.39	<2.37	<2.38	<2.38	0.6
Chrysene/Triphenylene	<2.39	<2.37	<2.38	<2.38	0.6
Coronene	13.9	<11.8	<11.9	<12.5	9.4
Dibenzo(a,c/a,h)Anthracene	<2.39	<2.37	<2.38	<2.38	0.6
Dibenzo(a,e)pyrene	<12.0	<11.8	<11.9	<11.9	0.6
9,10-dimethylanthracene	<2.39	4.18	<2.38	<2.98	34.8
7,12-Dimethylbenzo(a)anthracene	<2.39	<2.37	<2.38	<2.38	0.6
Fluoranthene	7.34	9.67	7.56	8.19	15.7
Fluorene	2.97	3.67	3.15	3.26	11.1
Indeno(1,2,3-cd)Pyrene	<2.39	<2.37	<2.38	<2.38	0.6
2-methylanthracene	6.42	7.06	12.5	8.65	38.3
3-Methylcholanthrene	<12.0	<11.8	<11.9	<11.9	0.6
1-Methylnaphthalene	4.45	9.39	6.12	6.65	37.8
2-Methylnaphthalene	7.90	16.9	12.1	12.3	36.6
1-Methylphenanthrene	<2.39	<2.37	<2.38	<2.38	0.6
9-Methylphenanthrene	3.07	3.14	5.46	3.89	35.0
Naphthalene	26.7	49.7	40.2	38.9	29.7
Perylene	<2.39	<2.37	<2.38	<2.38	0.6
Phenanthrene	22.7	26.2	38.0	29.0	27.6
Picene	<12.0	<11.8	<11.9	<11.9	0.6
Pyrene	10.2	10.0	8.63	9.61	8.8
Tetralin	6.84	18.1	8.57	11.2	54.2
m-terphenyl	<2.39	<2.37	<2.38	<2.38	0.6
o-Terphenyl	<2.39	<2.37	<2.38	<2.38	0.6
p-terphenyl	<2.39	<2.37	<2.38	<2.38	0.6
Total	<215	<263	<256	<245	10.5

* At 25°C and 1 atmosphere

TABLE 76
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Adjusted Concentrations

Compound	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<1.98	<1.94	<1.93	<1.95	1.3
Acenaphthylene	<1.98	<1.94	<1.93	<1.95	1.3
Anthracene	<1.98	<1.94	<1.93	<1.95	1.3
Benzo(a)Anthracene	<1.98	<1.94	<1.93	<1.95	1.3
Benzo(b)Fluoranthene	<1.98	<1.94	<1.93	<1.95	1.3
Benzo(k)Fluoranthene	<1.98	<1.94	<1.93	<1.95	1.3
Benzo(a)fluorene	<1.98	<1.94	<1.93	<1.95	1.3
Benzo(b)fluorene	<1.98	<1.94	<1.93	<1.95	1.3
Benzo(g,h,i)Perylene	9.41	<1.94	7.04	<6.13	62.2
Benzo(a)Pyrene	<1.98	<1.94	<1.93	<1.95	1.3
Benzo(e)Pyrene	<1.98	<1.94	2.18	<2.03	6.2
Biphenyl	4.27	6.20	5.96	5.48	19.1
2-Chloronaphthalene	<1.98	<1.94	<1.93	<1.95	1.3
Chrysene/Triphenylene	<1.98	<1.94	<1.93	<1.95	1.3
Coronene	11.5	<9.71	<9.67	<10.3	10.2
Dibenzo(a,c/a,h)Anthracene	<1.98	<1.94	<1.93	<1.95	1.3
Dibenzo(a,e)pyrene	<9.90	<9.71	<9.67	<9.76	1.3
9,10-dimethylanthracene	<1.98	3.43	<1.93	<2.45	34.7
7,12-Dimethylbenzo(a)anthracene	<1.98	<1.94	<1.93	<1.95	1.3
Fluoranthene	6.07	7.93	6.16	6.72	15.6
Fluorene	2.46	3.01	2.56	2.68	10.9
Indeno(1,2,3-cd)Pyrene	<1.98	<1.94	<1.93	<1.95	1.3
2-methylanthracene	5.31	5.79	10.1	7.08	37.5
3-Methylcholanthrene	<9.90	<9.71	<9.67	<9.76	1.3
1-Methylnaphthalene	3.68	7.70	4.98	5.45	37.6
2-Methylnaphthalene	6.54	13.9	9.88	10.1	36.4
1-Methylphenanthrene	<1.98	<1.94	<1.93	<1.95	1.3
9-Methylphenanthrene	2.54	2.57	4.45	3.19	34.3
Naphthalene	22.1	40.8	32.7	31.9	29.4
Perylene	<1.98	<1.94	<1.93	<1.95	1.3
Phenanthrene	18.8	21.5	30.9	23.8	26.8
Picene	<9.90	<9.7	<9.67	<9.76	1.3
Pyrene	8.40	8.24	7.03	7.89	9.5
Tetralin	5.66	14.8	6.98	9.16	54.2
m-terphenyl	<1.98	<1.94	<1.93	<1.95	1.3
o-Terphenyl	<1.98	<1.94	<1.93	<1.95	1.3
p-terphenyl	<1.98	<1.94	<1.93	<1.95	1.3
Total	<178	<215	<208	<201	9.9

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 77
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Wet Reference Concentrations

Compound	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<2.03	<2.01	<2.00	<2.02	0.7
Acenaphthylene	<2.03	<2.01	<2.00	<2.02	0.7
Anthracene	<2.03	<2.01	<2.00	<2.02	0.7
Benzo(a)Anthracene	<2.03	<2.01	<2.00	<2.02	0.7
Benzo(b)Fluoranthene	<2.03	<2.01	<2.00	<2.02	0.7
Benzo(k)Fluoranthene	<2.03	<2.01	<2.00	<2.02	0.7
Benzo(a)fluorene	<2.03	<2.01	<2.00	<2.02	0.7
Benzo(b)fluorene	<2.03	<2.01	<2.00	<2.02	0.7
Benzo(g,h,i)Perylene	9.65	<2.01	7.30	<6.32	61.9
Benzo(a)Pyrene	<2.03	<2.01	<2.00	<2.02	0.7
Benzo(e)Pyrene	<2.03	<2.01	2.26	<2.10	6.4
Biphenyl	4.39	6.42	6.18	5.66	19.6
2-Chloronaphthalene	<2.03	<2.01	<2.00	<2.02	0.7
Chrysene/Triphenylene	<2.03	<2.01	<2.00	<2.02	0.7
Coronene	11.8	<10.1	<10.0	<10.6	9.6
Dibenzo(a,c/a,h)Anthracene	<2.03	<2.01	<2.00	<2.02	0.7
Dibenzo(a,e)pyrene	<10.2	<10.1	<10.0	<10.1	0.7
9,10-dimethylanthracene	<2.03	3.55	<2.00	<2.53	35.1
7,12-Dimethylbenzo(a)anthracene	<2.03	<2.01	<2.00	<2.02	0.7
Fluoranthene	6.23	8.22	6.38	6.94	15.9
Fluorene	2.52	3.12	2.66	2.77	11.3
Indeno(1,2,3-cd)Pyrene	<2.03	<2.01	<2.00	<2.02	0.7
2-methylanthracene	5.45	6.00	10.5	7.32	37.9
3-Methylcholanthrene	<10.2	<10.1	<10.0	<10.1	0.7
1-Methylnaphthalene	3.78	7.98	5.16	5.64	38.0
2-Methylnaphthalene	6.71	14.4	10.2	10.4	36.7
1-Methylphenanthrene	<2.03	<2.01	<2.00	<2.02	0.7
9-Methylphenanthrene	2.61	2.67	4.61	3.29	34.6
Naphthalene	22.7	42.3	33.9	33.0	29.8
Perylene	<2.03	<2.01	<2.00	<2.02	0.7
Phenanthrene	19.3	22.3	32.1	24.6	27.2
Picene	<10.2	<10.1	<10.0	<10.1	0.7
Pyrene	8.62	8.53	7.28	8.15	9.2
Tetralin	5.81	15.4	7.23	9.47	54.5
m-terphenyl	<2.03	<2.01	<2.00	<2.02	0.7
o-Terphenyl	<2.03	<2.01	<2.00	<2.02	0.7
p-terphenyl	<2.03	<2.01	<2.00	<2.02	0.7
Total	<183	<223	<216	<207	10.4

* At 25°C and 1 atmosphere

TABLE 78
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Rates

Compound	Emission Rate				Coefficient of Variation
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	%
Acenaphthene	<0.039	<0.039	<0.038	<0.039	0.7
Acenaphthylene	<0.039	<0.039	<0.038	<0.039	0.7
Anthracene	<0.039	<0.039	<0.038	<0.039	0.7
Benzo(a)Anthracene	<0.039	<0.039	<0.038	<0.039	0.7
Benzo(b)Fluoranthene	<0.039	<0.039	<0.038	<0.039	0.7
Benzo(k)Fluoranthene	<0.039	<0.039	<0.038	<0.039	0.7
Benzo(a)fluorene	<0.039	<0.039	<0.038	<0.039	0.7
Benzo(b)fluorene	<0.039	<0.039	<0.038	<0.039	0.7
Benzo(g,h,i)Perylene	0.19	<0.039	0.14	<0.12	61.8
Benzo(a)Pyrene	<0.039	<0.039	<0.038	<0.039	0.7
Benzo(e)Pyrene	<0.039	<0.039	0.043	<0.040	6.3
Biphenyl	0.084	0.12	0.12	0.11	19.8
2-Chloronaphthalene	<0.039	<0.039	<0.038	<0.039	0.7
Chrysene/Triphenylene	<0.039	<0.039	<0.038	<0.039	0.7
Coronene	0.23	<0.19	<0.19	<0.20	9.4
Dibenzo(a,c/a,h)Anthracene	<0.039	<0.039	<0.038	<0.039	0.7
Dibenzo(a,e)pyrene	<0.20	<0.19	<0.19	<0.19	0.7
9,10-dimethylanthracene	<0.039	0.069	<0.038	<0.049	35.4
7,12-Dimethylbenzo(a)anthracene	<0.039	<0.039	<0.038	<0.039	0.7
Fluoranthene	0.12	0.16	0.12	0.13	16.2
Fluorene	0.048	0.060	0.051	0.053	11.6
Indeno(1,2,3-cd)Pyrene	<0.039	<0.039	<0.038	<0.039	0.7
2-methylanthracene	0.10	0.12	0.20	0.14	37.7
3-Methylcholanthrene	<0.20	<0.19	<0.19	<0.19	0.7
1-Methylnaphthalene	0.073	0.15	0.099	0.11	38.3
2-Methylnaphthalene	0.13	0.28	0.20	0.20	37.0
1-Methylphenanthrene	<0.039	<0.039	<0.038	<0.039	0.7
9-Methylphenanthrene	0.050	0.051	0.089	0.063	34.4
Naphthalene	0.44	0.82	0.65	0.63	30.0
Perylene	<0.039	<0.039	<0.038	<0.039	0.7
Phenanthrene	0.37	0.43	0.62	0.47	27.1
Picene	<0.20	<0.19	<0.19	<0.19	0.7
Pyrene	0.17	0.16	0.14	0.16	9.3
Tetralin	0.11	0.30	0.14	0.18	54.8
m-terphenyl	<0.039	<0.039	<0.038	<0.039	0.7
o-Terphenyl	<0.039	<0.039	<0.038	<0.039	0.7
p-terphenyl	<0.039	<0.039	<0.038	<0.039	0.7
Total	<3.51	<4.31	<4.15	<3.99	10.6

TABLE 79
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Polycyclic Aromatic Hydrocarbon Emission Data

Compound	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	<1.41	<2.38	<1.95	<2.02	<0.039
Acenaphthylene	<1.41	<2.38	<1.95	<2.02	<0.039
Anthracene	<1.41	<2.38	<1.95	<2.02	<0.039
Benzo(a)Anthracene	<1.41	<2.38	<1.95	<2.02	<0.039
Benzo(b)Fluoranthene	<1.41	<2.38	<1.95	<2.02	<0.039
Benzo(k)Fluoranthene	<1.41	<2.38	<1.95	<2.02	<0.039
Benzo(a)fluorene	<1.41	<2.38	<1.95	<2.02	<0.039
Benzo(b)fluorene	<1.41	<2.38	<1.95	<2.02	<0.039
Benzo(g,h,i)Perylene	<4.42	<7.46	<6.13	<6.32	<0.12
Benzo(a)Pyrene	<1.41	<2.38	<1.95	<2.02	<0.039
Benzo(e)Pyrene	<1.47	<2.48	<2.03	<2.10	<0.040
Biphenyl	3.95	6.68	5.48	5.66	0.11
2-Chloronaphthalene	<1.41	<2.38	<1.95	<2.02	<0.039
Chrysene/Triphenylene	<1.41	<2.38	<1.95	<2.02	<0.039
Coronene	<7.43	<12.5	<10.3	<10.6	<0.20
Dibenzo(a,c/a,h)Anthracene	<1.41	<2.38	<1.95	<2.02	<0.039
Dibenzo(a,e)pyrene	<7.04	<11.9	<9.76	<10.1	<0.19
9,10-dimethylanthracene	<1.77	<2.98	<2.45	<2.53	<0.049
7,12-Dimethylbenzo(a)anthracene	<1.41	<2.38	<1.95	<2.02	<0.039
Fluoranthene	4.85	8.19	6.72	6.94	0.13
Fluorene	1.93	3.26	2.68	2.77	0.053
Indeno(1,2,3-cd)Pyrene	<1.41	<2.38	<1.95	<2.02	<0.039
2-methylanthracene	5.11	8.65	7.08	7.32	0.14
3-Methylcholanthrene	<7.04	<11.9	<9.76	<10.1	<0.19
1-Methylnaphthalene	3.94	6.65	5.45	5.64	0.11
2-Methylnaphthalene	7.29	12.3	10.1	10.4	0.20
1-Methylphenanthrene	<1.41	<2.38	<1.95	<2.02	<0.039
9-Methylphenanthrene	2.30	3.89	3.19	3.29	0.063
Naphthalene	23.0	38.9	31.9	33.0	0.63
Perylene	<1.41	<2.38	<1.95	<2.02	<0.039
Phenanthrene	17.1	29.0	23.8	24.6	0.47
Picene	<7.04	<11.9	<9.76	<10.1	<0.19
Pyrene	5.69	9.61	7.89	8.15	0.16
Tetralin	6.62	11.2	9.16	9.47	0.18
m-terphenyl	<1.41	<2.38	<1.95	<2.02	<0.039
o-Terphenyl	<1.41	<2.38	<1.95	<2.02	<0.039
p-terphenyl	<1.41	<2.38	<1.95	<2.02	<0.039
Total	<145	<245	<201	<207	<3.99

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 80
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Polycyclic Aromatic Hydrocarbon Analyses

Compound	Blank Train ng	Method Blank ng
Acenaphthene	<12	<12
Acenaphthylene	<12	119
Anthracene	<12	<12
Benzo(a)Anthracene	<12	<12
Benzo(b)Fluoranthene	<12	<12
Benzo(k)Fluoranthene	<12	<12
Benzo(a)fluorene	<12	<12
Benzo(b)fluorene	<12	<12
Benzo(g,h,i)Perylene	98.0	<12
Benzo(a)Pyrene	<12	14.9
Benzo(e)Pyrene	13.7	<12
Biphenyl	<12	12.1
2-Chloronaphthalene	<12	24.1
Chrysene/Triphenylene	<12	<12
Coronene	89.3	<60
Dibenzo(a,c/a,h)Anthracene	<12	<12
Dibenzo(a,e)pyrene	<60	<60
9,10-dimethylanthracene	<12	<12
7,12-Dimethylbenzo(a)anthracene	<12	<12
Fluoranthene	14.9	<12
Fluorene	<12	<12
Indeno(1,2,3-cd)Pyrene	16.2	<12
2-methylanthracene	<12	<12
3-Methylcholanthrene	<60	<60
1-Methylnaphthalene	12.2	17.0
2-Methylnaphthalene	23.2	25.0
1-Methylphenanthrene	<12	<12
9-Methylphenanthrene	<12	<12
Naphthalene	98.1	61.6
Perylene	<12	<12
Phenanthrene	32.7	12.5
Picene	<60	<60
Pyrene	24.3	<12
Tetralin	26.8	16.6
m-terphenyl	<12	<12
o-Terphenyl	<12	<12
p-terphenyl	<12	<12
Total	<905	<831

"<" indicates that the amount detected is less than the detection limit. In these cases the value of the detection limit was used to calculate the total collected.

TABLE 81
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Acetaldehyde, Formaldehyde and Acrolein Emission Data

Acetaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Acetaldehyde Concentration Actual µg/m^3	Dry Reference µg/Rm^3*	Dry Adjusted µg/Rm^3**	Wet Reference µg/Rm^3*	Acetaldehyde Emission Rate mg/s
1	1.31	0.0383	20.4	34.2	28.3	29.0	0.56
2	1.29	0.0383	20.0	33.6	27.6	28.6	0.55
3	1.60	0.0374	25.5	42.8	35.1	36.4	0.70
Average			21.9	36.9	30.3	31.3	0.60
Blank	2.39						

Formaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Formaldehyde Concentration Actual µg/m^3	Dry Reference µg/Rm^3*	Dry Adjusted µg/Rm^3**	Wet Reference µg/Rm^3*	Formaldehyde Emission Rate mg/s
1	0.28	0.0383	4.35	7.30	6.05	6.20	0.12
2	0.35	0.0383	5.43	9.13	7.49	7.76	0.15
3	0.33	0.0374	5.25	8.83	7.24	7.51	0.15
Average			5.01	8.42	6.92	7.15	0.14
Blank	0.32						

Acrolein

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Acrolein Concentration Actual µg/m^3	Dry Reference µg/Rm^3*	Dry Adjusted µg/Rm^3**	Wet Reference µg/Rm^3*	Acrolein Emission Rate mg/s
1	<0.1	0.0383	<1.55	<2.61	<2.16	<2.21	<0.042
2	<0.1	0.0383	<1.55	<2.61	<2.14	<2.22	<0.043
3	<0.1	0.0374	<1.59	<2.67	<2.19	<2.27	<0.044
Average			<1.57	<2.63	<2.16	<2.23	<0.043
Blank	<0.1						

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

Sampling was conducted at a single point. Volumetric flowrates from corresponding isokinetic tests were used to calculate emission data.

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 82
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Emission Data
Test No. 1

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m^3	µg/Rm^3*	µg/Rm^3**	µg/Rm^3*	mg/s
Acetone	0.18	4.38	7.35	6.09	6.23	0.12
Benzene	0.22	5.24	8.79	7.28	7.46	0.14
Bromodichloromethane	<0.01	<0.24	<0.40	<0.33	<0.34	<0.0065
Bromoform	<0.01	<0.24	<0.40	<0.33	<0.34	<0.0065
Bromomethane	<0.09	<2.15	<3.61	<2.99	<3.07	<0.059
1,3-Butadiene	<0.02	<0.48	<0.80	<0.67	<0.68	<0.013
2-Butanone	0.042	1.00	1.69	1.40	1.43	0.027
Carbon Tetrachloride	<0.01	<0.24	<0.40	<0.33	<0.34	<0.0065
Chloroform	0.045	1.08	1.81	1.50	1.53	0.029
Cumene (Isopropylbenzene)	<0.02	<0.48	<0.80	<0.67	<0.68	<0.013
Dibromochloromethane	<0.01	<0.24	<0.40	<0.33	<0.34	<0.0065
Dichlorodifluoromethane	<0.02	<0.48	<0.80	<0.67	<0.68	<0.013
1,2-Dichloroethane	0.012	0.29	0.48	0.40	0.41	0.0078
trans,1,2-Dichloroethene	<0.01	<0.24	<0.40	<0.33	<0.34	<0.0065
1,1-Dichloroethene	<0.01	<0.24	<0.40	<0.33	<0.34	<0.0065
1,2-Dichloropropane	<0.01	<0.24	<0.40	<0.33	<0.34	<0.0065
Ethylbenzene	<0.01	<0.24	<0.40	<0.33	<0.34	<0.0065
Ethylene Dibromide	<0.02	<0.48	<0.80	<0.67	<0.68	<0.013
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.48	<0.80	<0.67	<0.68	<0.013
Methylene Chloride	0.23	5.38	9.03	7.48	7.67	0.15
Styrene	0.027	0.65	1.08	0.90	0.92	0.018
Tetrachloroethene	0.017	0.41	0.68	0.57	0.58	0.011
Toluene	0.31	7.44	12.5	10.3	10.6	0.20
1,1,1-Trichloroethane	<0.01	<0.24	<0.40	<0.33	<0.34	<0.0065
Trichloroethene/1,1,2-Trichloroethene	<0.02	<0.48	<0.80	<0.67	<0.68	<0.013
Trichlorotrifluoroethane	<0.02	<0.48	<0.80	<0.67	<0.68	<0.013
Trichlorofluoromethane	<0.02	<0.48	<0.80	<0.67	<0.68	<0.013
M&P-Xylene	<0.03	<0.72	<1.20	<1.00	<1.02	<0.020
O-Xylene	<0.01	<0.24	<0.40	<0.33	<0.34	<0.0065
Vinyl Chloride	<0.02	<0.48	<0.80	<0.67	<0.68	<0.013
Total	<1.48	<35.4	<59.5	<49.2	<50.5	<0.97

Dry Gas Volume Sampled (Rm^3*) :	0.0249
Actual Flowrate (m^3/s) :	27.4
Dry Reference Flowrate (Rm^3/s*) :	16.3
Dry Adjusted Flowrate (Rm^3/s**) :	19.7
Wet Reference Flowrate (Rm^3/s*) :	19.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

TABLE 83
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Emission Data
Test No. 2

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m^3	µg/Rm^3*	µg/Rm^3**	µg/Rm^3*	mg/s
Acetone	0.22	5.18	8.70	7.21	7.38	0.14
Benzene	0.25	5.93	9.96	8.25	8.45	0.16
Bromodichloromethane	0.011	0.26	0.43	0.36	0.37	0.0071
Bromoform	<0.01	<0.23	<0.39	<0.33	<0.33	<0.0064
Bromomethane	<0.09	<2.11	<3.54	<2.93	<3.01	<0.058
1,3-Butadiene	<0.02	<0.47	<0.79	<0.65	<0.67	<0.013
2-Butanone	0.050	1.17	1.97	1.63	1.67	0.032
Carbon Tetrachloride	<0.01	<0.23	<0.39	<0.33	<0.33	<0.0064
Chloroform	0.055	1.29	2.17	1.79	1.84	0.035
Cumene (Isopropylbenzene)	<0.02	<0.47	<0.79	<0.65	<0.67	<0.013
Dibromochloromethane	0.012	0.28	0.47	0.39	0.40	0.0077
Dichlorodifluoromethane	<0.02	<0.47	<0.79	<0.65	<0.67	<0.013
1,2-Dichloroethane	0.013	0.30	0.51	0.42	0.43	0.0083
trans,1,2-Dichloroethene	<0.01	<0.23	<0.39	<0.33	<0.33	<0.0064
1,1-Dichloroethene	<0.01	<0.23	<0.39	<0.33	<0.33	<0.0064
1,2-Dichloropropane	<0.01	<0.23	<0.39	<0.33	<0.33	<0.0064
Ethylbenzene	<0.01	<0.23	<0.39	<0.33	<0.33	<0.0064
Ethylene Dibromide	<0.02	<0.47	<0.79	<0.65	<0.67	<0.013
Mesitylene (1,3,5-Trimethylbenzene)	0.023	0.54	0.91	0.75	0.77	0.015
Methylene Chloride	0.27	6.38	10.7	8.87	9.09	0.17
Styrene	0.032	0.75	1.26	1.04	1.07	0.021
Tetrachloroethene	0.020	0.47	0.79	0.65	0.67	0.013
Toluene	0.38	8.79	14.8	12.2	12.5	0.24
1,1,1-Trichloroethane	<0.01	<0.23	<0.39	<0.33	<0.33	<0.0064
Trichloroethene/1,1,2-Trichloroethene	<0.02	<0.47	<0.79	<0.65	<0.67	<0.013
Trichlorotrifluoroethane	<0.02	<0.47	<0.79	<0.65	<0.67	<0.013
Trichlorofluoromethane	<0.02	<0.47	<0.79	<0.65	<0.67	<0.013
M&P-Xylene	<0.03	<0.70	<1.18	<0.98	<1.00	<0.019
O-Xylene	<0.01	<0.23	<0.39	<0.33	<0.33	<0.0064
Vinyl Chloride	<0.02	<0.47	<0.79	<0.65	<0.67	<0.013
Total	<1.70	<39.8	<66.8	<55.3	<56.7	<1.09

Dry Gas Volume Sampled (Rm^3*) :	0.0254
Actual Flowrate (m^3/s) :	27.4
Dry Reference Flowrate (Rm^3/s*) :	16.3
Dry Adjusted Flowrate (Rm^3/s**) :	19.7
Wet Reference Flowrate (Rm^3/s*) :	19.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

TABLE 84
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Emission Data
Test No. 3

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	µg	µg/m^3	µg/Rm^3*	µg/Rm^3**	µg/Rm^3*	mg/s
Acetone	0.11	2.38	4.00	3.31	3.39	0.065
Benzene	0.17	3.62	6.09	5.04	5.16	0.099
Bromodichloromethane	<0.01	<0.22	<0.37	<0.30	<0.31	<0.0060
Bromoform	<0.01	<0.22	<0.37	<0.30	<0.31	<0.0060
Bromomethane	<0.09	<1.97	<3.30	<2.73	<2.80	<0.054
1,3-Butadiene	<0.02	<0.44	<0.73	<0.61	<0.62	<0.012
2-Butanone	0.025	0.55	0.92	0.76	0.78	0.015
Carbon Tetrachloride	<0.01	<0.22	<0.37	<0.30	<0.31	<0.0060
Chloroform	0.027	0.59	0.99	0.82	0.84	0.016
Cumene (Isopropylbenzene)	<0.02	<0.44	<0.73	<0.61	<0.62	<0.012
Dibromochloromethane	<0.01	<0.22	<0.37	<0.30	<0.31	<0.0060
Dichlorodifluoromethane	<0.02	<0.44	<0.73	<0.61	<0.62	<0.012
1,2-Dichloroethane	<0.01	<0.22	<0.37	<0.30	<0.31	<0.0060
trans,1,2-Dichloroethene	<0.01	<0.22	<0.37	<0.30	<0.31	<0.0060
1,1-Dichloroethene	<0.01	<0.22	<0.37	<0.30	<0.31	<0.0060
1,2-Dichloropropane	<0.01	<0.22	<0.37	<0.30	<0.31	<0.0060
Ethylbenzene	<0.01	<0.22	<0.37	<0.30	<0.31	<0.0060
Ethylene Dibromide	<0.02	<0.44	<0.73	<0.61	<0.62	<0.012
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.44	<0.73	<0.61	<0.62	<0.012
Methylene Chloride	0.14	2.95	4.95	4.10	4.20	0.081
Styrene	0.021	0.46	0.77	0.64	0.65	0.013
Tetrachloroethene	0.013	0.28	0.48	0.39	0.40	0.0078
Toluene	0.25	5.35	8.98	7.44	7.62	0.15
1,1,1-Trichloroethane	<0.01	<0.22	<0.37	<0.30	<0.31	<0.0060
Trichloroethene/1,1,2-Trichloroethene	<0.02	<0.44	<0.73	<0.61	<0.62	<0.012
Trichlorotrifluoroethane	<0.02	<0.44	<0.73	<0.61	<0.62	<0.012
Trichlorofluoromethane	<0.02	<0.44	<0.73	<0.61	<0.62	<0.012
M&P-Xylene	<0.03	<0.66	<1.10	<0.91	<0.93	<0.018
O-Xylene	<0.01	<0.22	<0.37	<0.30	<0.31	<0.0060
Vinyl Chloride	<0.02	<0.44	<0.73	<0.61	<0.62	<0.012
Total	<1.15	<25.1	<42.2	<34.9	<35.8	<0.69

Dry Gas Volume Sampled (Rm^3*) :	0.0273
Actual Flowrate (m^3/s) :	27.4
Dry Reference Flowrate (Rm^3/s*) :	16.3
Dry Adjusted Flowrate (Rm^3/s**) :	19.7
Wet Reference Flowrate (Rm^3/s*) :	19.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

TABLE 85
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Actual Concentrations

Compound	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/m³	µg/m³	µg/m³	µg/m³	%
Acetone	4.38	5.18	2.38	3.98	36.3
Benzene	5.24	5.93	3.62	4.93	24.0
Bromodichloromethane	<0.24	0.26	<0.22	<0.24	8.3
Bromoform	<0.24	<0.23	<0.22	<0.23	4.7
Bromomethane	<2.15	<2.11	<1.97	<2.08	4.7
1,3-Butadiene	<0.48	<0.47	<0.44	<0.46	4.7
2-Butanone	1.00	1.17	0.55	0.91	35.7
Carbon Tetrachloride	<0.24	<0.23	<0.22	<0.23	4.7
Chloroform	1.08	1.29	0.59	0.99	36.4
Cumene (Isopropylbenzene)	<0.48	<0.47	<0.44	<0.46	4.7
Dibromochloromethane	<0.24	0.28	<0.22	<0.25	13.1
Dichlorodifluoromethane	<0.48	<0.47	<0.44	<0.46	4.7
1,2-Dichloroethane	0.29	0.30	<0.22	<0.27	16.9
trans,1,2-Dichloroethene	<0.24	<0.23	<0.22	<0.23	4.7
1,1-Dichloroethene	<0.24	<0.23	<0.22	<0.23	4.7
1,2-Dichloropropane	<0.24	<0.23	<0.22	<0.23	4.7
Ethylbenzene	<0.24	<0.23	<0.22	<0.23	4.7
Ethylene Dibromide	<0.48	<0.47	<0.44	<0.46	4.7
Mesitylene (1,3,5-Trimethylbenzene)	<0.48	0.54	<0.44	<0.48	10.7
Methylene Chloride	5.38	6.38	2.95	4.90	36.0
Styrene	0.65	0.75	0.46	0.62	23.9
Tetrachloroethene	0.41	0.47	0.28	0.39	24.4
Toluene	7.44	8.79	5.35	7.19	24.1
1,1,1-Trichloroethane	<0.24	<0.23	<0.22	<0.23	4.7
Trichloroethene/1,1,2-Trichloroethene	<0.48	<0.47	<0.44	<0.46	4.7
Trichlorotrifluoroethane	<0.48	<0.47	<0.44	<0.46	4.7
Trichlorofluoromethane	<0.48	<0.47	<0.44	<0.46	4.7
M&P-Xylene	<0.72	<0.70	<0.66	<0.69	4.7
O-Xylene	<0.24	<0.23	<0.22	<0.23	4.7
Vinyl Chloride	<0.48	<0.47	<0.44	<0.46	4.7
Total	<35.4	<39.8	<25.1	<33.4	22.5

TABLE 86
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Dry Reference Concentrations

Compound	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	%
Acetone	7.35	8.70	4.00	6.68	36.3
Benzene	8.79	9.96	6.09	8.28	24.0
Bromodichloromethane	<0.40	0.43	<0.37	<0.40	8.3
Bromoform	<0.40	<0.39	<0.37	<0.39	4.7
Bromomethane	<3.61	<3.54	<3.30	<3.49	4.7
1,3-Butadiene	<0.80	<0.79	<0.73	<0.77	4.7
2-Butanone	1.69	1.97	0.92	1.52	35.7
Carbon Tetrachloride	<0.40	<0.39	<0.37	<0.39	4.7
Chloroform	1.81	2.17	0.99	1.65	36.4
Cumene (Isopropylbenzene)	<0.80	<0.79	<0.73	<0.77	4.7
Dibromochloromethane	<0.40	0.47	<0.37	<0.41	13.1
Dichlorodifluoromethane	<0.80	<0.79	<0.73	<0.77	4.7
1,2-Dichloroethane	0.48	0.51	<0.37	<0.45	16.9
trans,1,2-Dichloroethene	<0.40	<0.39	<0.37	<0.39	4.7
1,1-Dichloroethene	<0.40	<0.39	<0.37	<0.39	4.7
1,2-Dichloropropane	<0.40	<0.39	<0.37	<0.39	4.7
Ethylbenzene	<0.40	<0.39	<0.37	<0.39	4.7
Ethylene Dibromide	<0.80	<0.79	<0.73	<0.77	4.7
Mesitylene (1,3,5-Trimethylbenzene)	<0.80	0.91	<0.73	<0.81	10.7
Methylene Chloride	9.03	10.7	4.95	8.23	36.0
Styrene	1.08	1.26	0.77	1.04	23.9
Tetrachloroethene	0.68	0.79	0.48	0.65	24.4
Toluene	12.5	14.8	8.98	12.1	24.1
1,1,1-Trichloroethane	<0.40	<0.39	<0.37	<0.39	4.7
Trichloroethene/1,1,2-Trichloroethene	<0.80	<0.79	<0.73	<0.77	4.7
Trichlorotrifluoroethane	<0.80	<0.79	<0.73	<0.77	4.7
Trichlorofluoromethane	<0.80	<0.79	<0.73	<0.77	4.7
M&P-Xylene	<1.20	<1.18	<1.10	<1.16	4.7
O-Xylene	<0.40	<0.39	<0.37	<0.39	4.7
Vinyl Chloride	<0.80	<0.79	<0.73	<0.77	4.7
Total	<59.5	<66.8	<42.2	<56.2	22.5

* At 25°C and 1 atmosphere

TABLE 87
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Dry Adjusted Concentrations

Compound	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	%
Acetone	6.09	7.21	3.31	5.53	36.3
Benzene	7.28	8.25	5.04	6.86	24.0
Bromodichloromethane	<0.33	0.36	<0.30	<0.33	8.3
Bromoform	<0.33	<0.33	<0.30	<0.32	4.7
Bromomethane	<2.99	<2.93	<2.73	<2.89	4.7
1,3-Butadiene	<0.67	<0.65	<0.61	<0.64	4.7
2-Butanone	1.40	1.63	0.76	1.26	35.7
Carbon Tetrachloride	<0.33	<0.33	<0.30	<0.32	4.7
Chloroform	1.50	1.79	0.82	1.37	36.4
Cumene (Isopropylbenzene)	<0.67	<0.65	<0.61	<0.64	4.7
Dibromochloromethane	<0.33	0.39	<0.30	<0.34	13.1
Dichlorodifluoromethane	<0.67	<0.65	<0.61	<0.64	4.7
1,2-Dichloroethane	0.40	0.42	<0.30	<0.38	16.9
trans,1,2-Dichloroethene	<0.33	<0.33	<0.30	<0.32	4.7
1,1-Dichloroethene	<0.33	<0.33	<0.30	<0.32	4.7
1,2-Dichloropropane	<0.33	<0.33	<0.30	<0.32	4.7
Ethylbenzene	<0.33	<0.33	<0.30	<0.32	4.7
Ethylene Dibromide	<0.67	<0.65	<0.61	<0.64	4.7
Mesitylene (1,3,5-Trimethylbenzene)	<0.67	0.75	<0.61	<0.67	10.7
Methylene Chloride	7.48	8.87	4.10	6.82	36.0
Styrene	0.90	1.04	0.64	0.86	23.9
Tetrachloroethene	0.57	0.65	0.39	0.54	24.4
Toluene	10.3	12.2	7.44	10.0	24.1
1,1,1-Trichloroethane	<0.33	<0.33	<0.30	<0.32	4.7
Trichloroethene/1,1,2-Trichloroethene	<0.67	<0.65	<0.61	<0.64	4.7
Trichlorotrifluoroethane	<0.67	<0.65	<0.61	<0.64	4.7
Trichlorofluoromethane	<0.67	<0.65	<0.61	<0.64	4.7
M&P-Xylene	<1.00	<0.98	<0.91	<0.96	4.7
O-Xylene	<0.33	<0.33	<0.30	<0.32	4.7
Vinyl Chloride	<0.67	<0.65	<0.61	<0.64	4.7
Total	<49.2	<55.3	<34.9	<46.5	22.5

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 88
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Wet Reference Concentrations

Compound	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Acetone	6.23	7.38	3.39	5.67	36.3
Benzene	7.46	8.45	5.16	7.03	24.0
Bromodichloromethane	<0.34	0.37	<0.31	<0.34	8.3
Bromoform	<0.34	<0.33	<0.31	<0.33	4.7
Bromomethane	<3.07	<3.01	<2.80	<2.96	4.7
1,3-Butadiene	<0.68	<0.67	<0.62	<0.66	4.7
2-Butanone	1.43	1.67	0.78	1.29	35.7
Carbon Tetrachloride	<0.34	<0.33	<0.31	<0.33	4.7
Chloroform	1.53	1.84	0.84	1.40	36.4
Cumene (Isopropylbenzene)	<0.68	<0.67	<0.62	<0.66	4.7
Dibromochloromethane	<0.34	0.40	<0.31	<0.35	13.1
Dichlorodifluoromethane	<0.68	<0.67	<0.62	<0.66	4.7
1,2-Dichloroethane	0.41	0.43	<0.31	<0.38	16.9
trans,1,2-Dichloroethene	<0.34	<0.33	<0.31	<0.33	4.7
1,1-Dichloroethene	<0.34	<0.33	<0.31	<0.33	4.7
1,2-Dichloropropane	<0.34	<0.33	<0.31	<0.33	4.7
Ethylbenzene	<0.34	<0.33	<0.31	<0.33	4.7
Ethylene Dibromide	<0.68	<0.67	<0.62	<0.66	4.7
Mesitylene (1,3,5-Trimethylbenzene)	<0.68	0.77	<0.62	<0.69	10.7
Methylene Chloride	7.67	9.09	4.20	6.98	36.0
Styrene	0.92	1.07	0.65	0.88	23.9
Tetrachloroethene	0.58	0.67	0.40	0.55	24.4
Toluene	10.6	12.5	7.62	10.2	24.1
1,1,1-Trichloroethane	<0.34	<0.33	<0.31	<0.33	4.7
Trichloroethene/1,1,2-Trichloroethene	<0.68	<0.67	<0.62	<0.66	4.7
Trichlorotrifluoroethane	<0.68	<0.67	<0.62	<0.66	4.7
Trichlorofluoromethane	<0.68	<0.67	<0.62	<0.66	4.7
M&P-Xylene	<1.02	<1.00	<0.93	<0.99	4.7
O-Xylene	<0.34	<0.33	<0.31	<0.33	4.7
Vinyl Chloride	<0.68	<0.67	<0.62	<0.66	4.7
Total	<50.5	<56.7	<35.8	<47.6	22.5

* At 25°C and 1 atmosphere

TABLE 89
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Emission Rates

Compound	Emission Rate				Coefficient of Variation
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	%
Acetone	0.12	0.14	0.065	0.11	36.3
Benzene	0.14	0.16	0.099	0.13	24.0
Bromodichloromethane	<0.0065	0.0071	<0.0060	<0.0065	8.3
Bromoform	<0.0065	<0.0064	<0.0060	<0.0063	4.7
Bromomethane	<0.059	<0.058	<0.054	<0.057	4.7
1,3-Butadiene	<0.013	<0.013	<0.012	<0.013	4.7
2-Butanone	0.027	0.032	0.015	0.025	35.7
Carbon Tetrachloride	<0.0065	<0.0064	<0.0060	<0.0063	4.7
Chloroform	0.029	0.035	0.016	0.027	36.4
Cumene (Isopropylbenzene)	<0.013	<0.013	<0.012	<0.013	4.7
Dibromochloromethane	<0.0065	0.0077	<0.0060	<0.0067	13.1
Dichlorodifluoromethane	<0.013	<0.013	<0.012	<0.013	4.7
1,2-Dichloroethane	0.0078	0.0083	<0.0060	<0.0074	16.9
trans,1,2-Dichloroethene	<0.0065	<0.0064	<0.0060	<0.0063	4.7
1,1-Dichloroethene	<0.0065	<0.0064	<0.0060	<0.0063	4.7
1,2-Dichloropropane	<0.0065	<0.0064	<0.0060	<0.0063	4.7
Ethylbenzene	<0.0065	<0.0064	<0.0060	<0.0063	4.7
Ethylene Dibromide	<0.013	<0.013	<0.012	<0.013	4.7
Mesitylene (1,3,5-Trimethylbenzene)	<0.013	0.015	<0.012	<0.013	10.7
Methylene Chloride	0.15	0.17	0.081	0.13	36.0
Styrene	0.018	0.021	0.013	0.017	23.9
Tetrachloroethene	0.011	0.013	0.0078	0.011	24.4
Toluene	0.20	0.24	0.15	0.20	24.1
1,1,1-Trichloroethane	<0.0065	<0.0064	<0.0060	<0.0063	4.7
Trichloroethene/1,1,2-Trichloroethene	<0.013	<0.013	<0.012	<0.013	4.7
Trichlorotrifluoroethane	<0.013	<0.013	<0.012	<0.013	4.7
Trichlorofluoromethane	<0.013	<0.013	<0.012	<0.013	4.7
M&P-Xylene	<0.020	<0.019	<0.018	<0.019	4.7
O-Xylene	<0.0065	<0.0064	<0.0060	<0.0063	4.7
Vinyl Chloride	<0.013	<0.013	<0.012	<0.013	4.7
Total	<0.97	<1.09	<0.69	<0.91	22.5

TABLE 90
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Volatile Organic Emission Data

Compound	Actual Concentration µg/m^3	Dry Reference Concentration µg/Rm^3*	Dry Adjusted Concentration µg/Rm^3*	Wet Reference Concentration µg/Rm^3*	Emission Rate mg/s
Acetone	3.98	6.68	5.53	5.67	0.11
Benzene	4.93	8.28	6.86	7.03	0.13
Bromodichloromethane	<0.24	<0.40	<0.33	<0.34	<0.0065
Bromoform	<0.23	<0.39	<0.32	<0.33	<0.0063
Bromomethane	<2.08	<3.49	<2.89	<2.96	<0.057
1,3-Butadiene	<0.46	<0.77	<0.64	<0.66	<0.013
2-Butanone	0.91	1.52	1.26	1.29	0.025
Carbon Tetrachloride	<0.23	<0.39	<0.32	<0.33	<0.0063
Chloroform	0.99	1.65	1.37	1.40	0.027
Cumene (Isopropylbenzene)	<0.46	<0.77	<0.64	<0.66	<0.013
Dibromochloromethane	<0.25	<0.41	<0.34	<0.35	<0.0067
Dichlorodifluoromethane	<0.46	<0.77	<0.64	<0.66	<0.013
1,2-Dichloroethane	<0.27	<0.45	<0.38	<0.38	<0.0074
trans,1,2-Dichloroethene	<0.23	<0.39	<0.32	<0.33	<0.0063
1,1-Dichloroethene	<0.23	<0.39	<0.32	<0.33	<0.0063
1,2-Dichloropropane	<0.23	<0.39	<0.32	<0.33	<0.0063
Ethylbenzene	<0.23	<0.39	<0.32	<0.33	<0.0063
Ethylene Dibromide	<0.46	<0.77	<0.64	<0.66	<0.013
Mesitylene (1,3,5-Trimethylbenzene)	<0.48	<0.81	<0.67	<0.69	<0.013
Methylene Chloride	4.90	8.23	6.82	6.98	0.13
Styrene	0.62	1.04	0.86	0.88	0.017
Tetrachloroethene	0.39	0.65	0.54	0.55	0.011
Toluene	7.19	12.1	10.0	10.2	0.20
1,1,1-Trichloroethane	<0.23	<0.39	<0.32	<0.33	<0.0063
Trichloroethene/1,1,2-Trichloroethene	<0.46	<0.77	<0.64	<0.66	<0.013
Trichlorotrifluoroethane	<0.46	<0.77	<0.64	<0.66	<0.013
Trichlorofluoromethane	<0.46	<0.77	<0.64	<0.66	<0.013
M&P-Xylene	<0.69	<1.16	<0.96	<0.99	<0.019
O-Xylene	<0.23	<0.39	<0.32	<0.33	<0.0063
Vinyl Chloride	<0.46	<0.77	<0.64	<0.66	<0.013
Total	<33.4	<56.2	<46.5	<47.6	<0.91

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 91
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Volatile Organic Analyses

Compound	Field Blank 2 Tube 10A/10B	Trip Blank Tube 11A/11B	Method Blank
	µg	µg	µg
Acetone	<0.1	0.107	<0.1
Benzene	0.158	<0.05	<0.05
Bromodichloromethane	<0.01	<0.01	<0.01
Bromoform	<0.01	<0.01	<0.01
Bromomethane	<0.09	<0.09	<0.09
1,3-Butadiene	<0.02	<0.02	<0.02
2-Butanone	0.019	<0.01	<0.01
Carbon Tetrachloride	<0.01	<0.01	<0.01
Chloroform	<0.01	<0.01	<0.01
Cumene (Isopropylbenzene)	<0.02	<0.02	<0.02
Dibromochloromethane	<0.01	<0.01	<0.01
Dichlorodifluoromethane	<0.02	<0.02	<0.02
1,2-Dichloroethane	<0.01	<0.01	<0.01
trans,1,2-Dichloroethene	<0.01	<0.01	<0.01
1,1-Dichloroethene	<0.01	<0.01	<0.01
1,2-Dichloropropane	<0.01	<0.01	<0.01
Ethylbenzene	<0.01	<0.01	<0.01
Ethylene Dibromide	<0.02	<0.02	<0.02
Mesitylene (1,3,5-Trimethylbenzene)	0.043	<0.02	<0.02
Methylene Chloride	<0.1	0.239	<0.1
Styrene	<0.02	<0.02	<0.02
Tetrachloroethene	<0.01	<0.01	<0.01
Toluene	0.305	<0.05	<0.05
1,1,1-Trichloroethane	<0.01	<0.01	<0.01
Trichloroethene/1,1,2-Trichloroethene	<0.02	<0.02	<0.02
Trichlorotrifluoroethane	<0.02	<0.02	<0.02
Trichlorofluoromethane	<0.02	<0.02	<0.02
M&P-Xylene	<0.03	<0.03	<0.03
O-Xylene	<0.01	<0.01	<0.01
Vinyl Chloride	<0.02	<0.02	<0.02
Total	<1.16	<0.91	<0.76

Note: "<" indicates that the analyte was not detected. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

APPENDIX 3

Pre-Test Plan Acceptance Letter
and ECA No. 7306-8FDKNX
(100 pages)

Tina Sanderson

From: Ruddy, Caitlyn (MECP) <Caitlyn.Ruddy@ontario.ca>
Sent: October 6, 2021 10:36 AM
To: Chris Belore
Cc: McKerrall, Jeffrey (MECP); Dugas, Celeste (MECP); Dunn, Philip (MECP); Butchart, Jeff (MECP); wmarsden@covanta.com; Fullerton, Bill (MECP); fdelamora@covanta.com; Kohler,Rick; Kwan,Lydia (LKwan@covanta.com); Andrew.Evans@durham.ca; gioseph.anello@durham.ca; muneeb.farid@york.ca; laura.mcdowell@york.ca; seth.dittman@york.ca; lindsay.milne@york.ca; Tina Sanderson
Subject: RE: 2021 Covanta DYEC Compliance Emission Testing Program

To Mr. Belore

The pre-test plan submitted on behalf Covanta Durham York Renewable Energy Limited Partnership is Approved.

The compliance testing program is to fulfill the requirements of Amended Environmental Compliance Approval No. 7306-8FDKNX.

The testing program is to be conducted during the week of November 29, 2021.

Please keep both our office and the local district office up to date with any changes to the testing schedule.

Caitlyn Ruddy

Source Assessment Specialist
Technology Standards Section
Technical Assessment and Standards Development Branch
Ministry of the Environment, Conservation, and Parks
Cell: 437-995-2835

From: Chris Belore <CBelore@ortech.ca>
Sent: September 29, 2021 4:19 PM
To: Source Testing (MECP) <SOURCETESTING@ontario.ca>; Fullerton, Bill (MECP) <Bill.Fullerton@ontario.ca>
Cc: McKerrall, Jeffrey (MECP) <Jeffrey.McKerrall@ontario.ca>; Dugas, Celeste (MECP) <Celeste.Dugas@ontario.ca>; Dunn, Philip (MECP) <Philip.Dunn@ontario.ca>; Butchart, Jeff (MECP) <jeff.butchart@ontario.ca>; wmarsden@covanta.com; fdelamora@covanta.com; Kohler,Rick <RKohler@covanta.com>; Kwan,Lydia (LKwan@covanta.com) <LKwan@covanta.com>; Andrew.Evans@durham.ca; gioseph.anello@durham.ca; muneeb.farid@york.ca; laura.mcdowell@york.ca; seth.dittman@york.ca; lindsay.milne@york.ca; Tina Sanderson <TSanderson@ortech.ca>
Subject: 2021 Covanta DYEC Compliance Emission Testing Program

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Mr. Fullerton,

With regards to the 2021 compliance emission testing program proposed for the Covanta Durham York Energy Centre, please find attached a letter with reference to ORTECH Pre-Test Plan No. 22050 for review and approval. The test program is currently scheduled to be performed during the week of November 29, 2021 (a tentative test schedule is provided in the attached letter).

Please don't hesitate to contact either myself or Tina Sanderson (ext. 522) should you have any questions regarding the test plan.

Best Regards,

Chris Belore
Principal, Emission Testing
ORTECH Consulting Inc.
804 Southdown Rd, Mississauga, L5J 2Y4
Phone: (905) 822-4120 or 1-877-774-6560 (Ext.: 324)
Cell: (647) 212-9176
Fax: (905) 855-0406
e-mail: cbelore@ortech.ca

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Ontario

Ministry of the Environment
Ministère de l'Environnement

CERTIFICATE OF APPROVAL
MULTI-MEDIA
Number 7306-8FDKNX
Issue Date: June 28, 2011

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3

and

The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
72 Osbourne Road
Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham

You have applied in accordance with Sections 9 and 27 of the Environmental Protection Act and Section 53 of the Ontario Water Resources Act for approval of:

A thermal treatment facility to be used for the receipt and manual and/or mechanical sorting of solid non-hazardous post-diversion municipal waste (Waste), temporary storage and thermal treatment of the Waste, abatement of the emissions from the processes and activities undertaken at the Site, handling, screening, sorting and/or conditioning of the residual wastes and management of the wastewater and the non-contact stormwater generated at the Site. The Facility's maximum Waste thermal treatment rate is 140,000 tonnes per year of Waste, the nominal electricity generation rate is 20 Megawatts and the nominal steam generation rate 72,000 kilograms per hour of steam.

The facility consists of the following major processes and support units:

(1) two (2) identical combustion trains, each having a nominal capacity of 218 tonnes of Waste per day venting into the atmosphere via a common exhaust stack, having an exit diameter of 1.71 metres, extending 87.6 metres above grade.

Each combustion train is an independent process train and it consists of the following main components:

(a) a stoker grate steam Boiler, having a design heat input of 118 Gigajoules per hour, equipped with a natural gas fired auxiliary Low NOx burner, having a nominal heat input of 59.5 Gigajoules per hour; and

(b) the following air pollution control equipment:

(i) a Selective Non Catalytic Reduction System (SNCR System) with ammonia injection for NOx control;
(ii) an activated carbon injection system, to reduce mercury and dioxins in flue gas;
(iii) a dry recirculation lime injection scrubber to control acid gases;
(iv) a pulse jet type baghouse to control particulate emissions;

(2) one (1) steam turbine generator set having a rated capacity of 20 Megawatts;

(3) waste and reagent storage as described in Condition 2.:

(4) fly ash conditioning system including two (2) surge bins, two (2) pugmills and seven (7) curing/storage bunkers;

(5) bottom ash sorting system including conveyors, screens, a rotary drum magnet and an eddy separator;

(6) one (1) emergency diesel generator, rated at 250 Kilowatts;

(7) natural gas-fired combustion equipment for comfort heating;

(8) a wastewater management system for collection, recirculation and reuse of the process water; and

(9) a stormwater management facility for collection, transmission and discharge of non-contact runoff at the Site, as described in the attached Schedule "G",

Note: Use of the site for any other type of waste is not approved under this Certificate, and requires obtaining a separate approval amending this Certificate.

For the purpose of this Provisional Certificate of Approval and the terms and conditions specified below, the following definitions apply:

"***Acoustic Assessment Report***" means the report, prepared in accordance with *Publication NPC-233* by Paul Niejadlik / Golder Associates Ltd. and dated March 2011 submitted in support of the application, that documents all sources of noise emissions and Noise Control Measures present at the Facility;

"**Acoustic Assessment Summary Table**" means a table summarizing the results of the Acoustic Assessment Report;

"**Acoustic Audit**" means an investigative procedure consisting of measurements of all noise emissions due to the operation of the Facility, assessed in comparison to the Performance Limits for the Facility regarding noise emissions, completed in accordance with the procedures set in the Ministry's *Publication NPC-103* and reported in accordance with the Ministry's *Publication NPC-233;*

"**Acoustic Audit Report**" means a report presenting the results of an Acoustic Audit, prepared in accordance with the Ministry's *Publication NPC-233;*

"**Acoustical Consultant**" means a person currently active in the field of environmental acoustics and noise/vibration control, who is familiar with Ministry noise guidelines and procedures and has a combination of formal university education, training and experience necessary to assess noise emissions from a Facility;

"**Air Standards Manager**" means the Manager, Human Toxicology and Air Standards Section, Standards Development Branch, or any other person who represents and carries out the duties of the Manager, Human Toxicology and Air Standards Section, Standards Development Branch, as those duties relate to the conditions of this Certificate;

"**APC Building**" means the building at the Site where the APC Equipment and the reagent indoor storage tanks are located;

"**APC Equipment**" means all the air pollution control equipment at the Facility, including the SNCR System, the activated carbon injection system, the dry recirculation lime injection scrubber and the pulse jet type baghouse to control emissions from the combustion chamber of the Boilers, the dust collectors to control emissions from the Residue Building and the dust collectors to control emissions from the reagent storage silos;

"**Boiler Building**" means the building at the Site where the Boilers, turbine generator and the air cooled condenser(s) are located;

"**Boilers**" means the two (2) steam boilers firing the approved Waste described in this Certificate;

"**Bulky Unprocessable Items**" means the incoming Waste received at the Site that cannot be processed in the Equipment;

"**CEM Systems**" means the continuous monitoring and recording systems used to measure and record the temperature and the emissions from the Boilers as specified in the attached Schedule "F";

"**Certificate**" means this entire provisional Certificate of Approval, issued in accordance with Sections 39 and 9 of the *EPA* and Section 53 of the *OWRA,* and includes any schedules attached to it, the application and the supporting documentation listed in the attached Schedule "A;

"***40 CFR 60***" means title 40, part 60 under the Code of Federal Regulations (Air Programs, U.S. Environmental Protection Agency), revised as of July 1, 1990, published by the Office of the Federal Register, National Archives and Records, Administration in the United States of America;

"**Complaint**" means a complaint received either by the Owner or the District Manager that has been confirmed by staff of the Ministry and the cause of which is attributed to the Owner's activities at the Facility;

"**Commencement Date of Operation**" means the date when the approved Waste is first received at the Site;

"**Compound of Concern**" means a contaminant that, based on generally available information, may be emitted to the atmosphere in a quantity from any source at the Facility that is significant either in comparison to the relevant Ministry Point of Impingement Limit or if a Ministry Point of Impingement Limit is not available for the compound then, based on generally available toxicological information, the compound has the potential to cause an adverse effect as defined by the *EPA* at a Point of Impingement;

"**Controlled Shutdown**" means an immediate cut-off of all waste into the Boilers, while maintaining the operation of the combustion chamber and the APC Equipment within the Performance Requirements;

"**Description Section**" means the section on page one of the Certificate describing the Owner's operations and the Equipment located at the Facility and specifying the Facility Production Limit for the Facility;

"**Dioxins and Furans**" means polychlorinated dibenzo-dioxins and polychlorinated dibenzofurans;

"**Director**" means any person appointed in writing by the Minister of the Environment pursuant to section 5 of the *EPA* and pursuant to section 5 of the *OWRA* as a Director for the purposes of Part V of the *EPA,* section 9 of the *EPA* and section 53 of the *OWRA;*

"**District Manager**" means the District Manager of the York Durham District Office of the Ministry;

"**Emergency Shutdown**" means an immediate cut-off of all waste feed into the Boilers, followed by an accelerated extinction of all combustion in the Boilers, while maintaining the combustion temperature within the Performance Requirements, except when unreasonable;

"**Emission Summary Table**" means the table prepared in accordance with *O. Reg. 419/05* and the Procedure Document listing the appropriate Point of Impingement concentrations of each Compound of Concern from the Facility and providing comparison to the corresponding Ministry Point of Impingement Limit;

"*EAA*" means the Environmental Assessment Act, R.S.O. 1990, c. E.18, as amended;

"**EA Approval**" means the Notice of Approval to Proceed with the Undertaking signed by the Minister of the Environment on November 3, 2010, EA File No. 04-EA-02-08;

"*EPA*" means the Environmental Protection Act, R.S.O. 1990, c. E.19, as amended;

"**Equipment**" means equipment or processes associated with the thermal treatment of the approved Waste described in this Certificate and in the Supporting Documentation referred to herein and any other equipment or processes handling wastes and reagents;

"**ESDM Report**" means the Emission Summary and Dispersion Modelling Report prepared in accordance with the Procedure Document by Golder Associates and dated March 2011 submitted in support of the application, and includes any amendments to the ESDM Report listed in the attached Schedule "A" and all subsequent up-dated ESDM Reports as applicable;

"**Facility**" means the entire operation associated with thermal treatment of Waste located on the property where the Equipment is located;

"**Facility Production Limit**" means the production limit placed on the main product(s) or raw materials used by the Facility that represents the design capacity of the Facility and assists in the definition of the operations approved by the Director;

"**Grizzly Building**" means the building at the Site where the bottom ash is screened and where the oversized constituents of the bottom ash (grizzly overs) are temporarily stored prior to transport for subsequent storage in the Residue Building;

"**Independent Acoustical Consultant**" means an Acoustical Consultant who is not representing the Owner and was not involved in preparing the Acoustic Assessment Report or the design/implementation of Noise Control Measures for the Facility and/or Equipment. The Independent Acoustical Consultant shall not be retained by the Acoustical Consultant involved in the noise impact assessment or the design/implementation of Noise Control Measures for the Facility and/or Equipment;

"**I-TEF**" means International Toxic Equivalency Factor derived for each dioxin and furan congener by comparing its toxicity to the toxicity of 2,3,7,8 tetrachloro dibenzo-p-dioxin, as recommended by the North Atlantic Treaty Organization Committee on Challenges to Modern Society (NATO CCMS) in 1989 and adopted by Canada in 1990;

"**I-TEQ**" means International Toxic Equivalent of dioxins and furans calculated using the I-TEFs, as recommended by the NATO CCMS in 1989 and adopted by Canada in 1990;

"**Manager**" means the Manager, Technology Standards Section, Standards Development Branch, who has been appointed under Section 5 of the *EPA* for the purposes of Section 11(1)2 of the *O. Reg. 419/05,* or any other person who represents and carries out the duties of the Manager,

Technology Standards Section, Standards Development Branch, as those duties relate to the conditions of this Certificate;

"**Ministry**" means the ministry of the government of Ontario responsible for the *EPA* and the *OWRA* and includes all officials, employees or other persons acting on its behalf or the Ontario Ministry of the Environment;

"**Municipality**" means the Municipality of Clarington;

"***NMA***" means the *Nutrient Management Act*, 2002, S.O. 2002, c. 4, as amended;

"**Noise Control Measures**" means measures to reduce the noise emission from the Facility and/or Equipment including, but not limited to silencers, acoustic louvers, enclosures, absorptive treatment, plenums and barriers;

"**LDR**" means the Lands Disposal Restrictions referred to in sections 74 through 85 of the *O. Reg. 347,* which prohibit the disposal of hazardous wastes on land until they have been treated to meet the treatment standards under the *O. Reg. 347;*

"**Leachate Toxicity Criteria**" means the concentrations of any of the contaminants listed in Schedule 4 at a concentration equal to or in excess of the concentration specified for that contaminant in Schedule 4 using the Toxicity Characteristic Leaching Procedure, defined in the *O. Reg. 347*;

"***O. Reg. 419/05***" means the *Ontario Regulation 419/05,* Air Pollution – Local Air Quality enacted under the *EPA,* as amended;

*"**O. Reg. 347**"* means the *Ontario Regulation 347,* R.R.O 1990 (General –Waste Management) enacted under the *EPA,* as amended;

"***OWRA***" means the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40, as amended;

"**Owner**" means any person that is responsible for the establishment and operation of the Site being approved by this Certificate, and it includes The Regional Municipality of Durham, The Regional Municipality of York, and Covanta Durham York Renewable Energy Limited Partnership (operator), their successors and assignees;

"***PA***" means the *Pesticides Act*, R.S.O. 1990, c.P. 11, as amended;

"**Performance Requirements**" means the performance requirements and emission limits specified in the section of this Certificate entitled "Performance Requirements";

"**Point of Impingement**" means any point outside the Facility in the natural environment and as defined by s.2 of the *O. Reg. 419/05;*

"**Point of Reception**" means the Point of Reception as defined by *Publication NPC-205* and/or *Publication NPC-232*, as applicable;

"**Pre-test Information**" means the information outlined in Section 1.1 of the Source Testing Code;

"**Procedure Document**" means the Ministry's document entitled "Procedure for Preparing an Emission Summary and Dispersion Modelling Report" dated July 2005, as amended;

"**Professional Engineer**" means a Professional Engineer as defined within the *Professional Engineers Act*, R.S.O. 1990, c. P.28, as amended;

"**Provincial Officer**" means any person designated in writing by the Minister as a provincial officer pursuant to Section 5 of the *OWRA* or Section 5 of the *EPA* or Section 17 of the *PA* or Section 4 of the *NMA* or Section 8 of the *SDWA;*

"***Publication NPC-103***" means the Ministry's Publication NPC-103 of the Model Municipal Noise Control By-Law, Final Report, dated August 1978, published by the Ministry, as amended;

"***Publication NPC-205***" means the Ministry's Publication NPC-205, entitled "Sound Level Limits for Stationary Sources in Class 1 & 2 Areas (Urban)", dated October, 1995, as amended;

"***Publication NPC-207***" means the Ministry's draft technical publication entitled "Impulse Vibration in Residential Buildings", dated November 1983, supplementing the Model Municipal Noise Control By-Law, Final Report, dated August 1978, published by the Ministry, as amended;

"***Publication NPC-232***" means the Ministry's Publication NPC-232, entitled "Sound Level Limits for Stationary Sources in Class 3 Areas (Rural)", dated October, 1995, as amended;

"***Publication NPC-233***" means the Ministry's Publication NPC-233, entitled "Information to be Submitted for Approval of Stationary Sources of Sound", dated October, 1995, as amended;

"**Rejected Waste**" means either municipal waste which cannot be processed at the Facility or waste which the Site is not approved to accept. Rejected Waste includes but is not limited to the Bulky Unprocessable Items and the Unacceptable Waste;

"**Regional Director**" means the Regional Director of the Central Region of the Ministry;

"**Regions**" means The Regional Municipality of Durham and The Regional Municipality of York;

"***Report EPS 1/PG/7***" means the Environment Canada Report EPS 1/PG/7, entitled "Protocols and Performance Specifications for Continuous Monitoring of Gaseous Emissions from Thermal Generation", dated September, 1993, as amended;

"**Residual Waste**" means waste resulting from the Waste processing activities at the Site. Residual Waste is limited to the recovered ferrous metals, the recovered non-ferrous metals, the bottom ash (consisting of the ash fines and the grizzly overs) and the fly ash (untreated and following conditioning);

"**Residue Building**" means the building at the Site where the bottom ash and the fly ash are processed, temporarily stored and loaded in transport vehicles for off-site disposal;

"**Schedules**" means the following schedules "A", "B", "C", "D", "F" and "G", attached to the Certificate and forming part of the Certificate;

"***SDWA***" means the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32, as amended;

"**Sensitive Receptor**" means any location where routine or normal activities occurring at reasonably expected times would experience adverse effect(s) from odour discharges from the Facility, including one or a combination of:

(a) private residences or public facilities where people sleep (e.g.: single and multi-unit dwellings, nursing homes, hospitals, trailer parks, camping grounds, etc.);

(b) institutional facilities (e.g.: schools, churches, community centres, day care centres, recreational centres, etc.);

(c) outdoor public recreational areas (e.g.: trailer parks, play grounds, picnic areas, etc.); and

(d) other outdoor public areas where there are continuous human activities (e.g.: commercial plazas and office buildings);

"**Site**" means the property where the Owner has located and operates the Facility and the Works and located at 72 Osbourne Road, 27, Concession Broken Front, Part 1 in the Municipality of Clarington, Regional Municipality of Durham;

"**Source Testing**" means monitoring, sampling and testing to measure emissions resulting from operating the Facility under conditions which yield the worst case emissions within the approved operating range of the Facility;

"***Source Testing Code***" means the Ministry's document entitled "Source Testing Code, Version 2, Report No. ARB-66-80", dated November 1980, as amended;

"**Stack**" means the stack that discharges emissions from the Boilers after those emissions have been controlled by the associated APC Equipment;

"**Substantial Completion**" has the same meaning as "substantial performance" in the *Construction Lien Act* R.S.O. 1990, c.C-30, as amended;

"**Supporting Documentation**" means the documents listed in the attached Schedule "A" of this Certificate which forms part of this Certificate;

"**Test Contaminants**" means the contaminants set out in the attached Schedule "D";

"**Tipping Building**" means the building at the Site where the incoming Waste is received, sorted and temporarily stored;

"**Total Power Failure**" means the loss of the external power supply and concurrent loss of all in-plant power generation;

"**Trained Personnel**" means one or more Site personnel trained in accordance with the requirements of Condition 9.;

"**Waste**" means municipal solid waste as defined in the *O. Reg. 347* and limited to the approved waste set out in Condition No. 2.(2);

"**Waste Processing Rate** means the mass of Waste fed into one of the Boilers;

"**Works**" means the sewage works described in the Owner's application, this Certificate and in the Supporting Documentation referred to herein, to the extent approved by this Certificate;

"**Unacceptable Waste**" means the incoming Waste received at the Site that does not meet the incoming Waste quality criteria set out in this Certificate, is of hazardous nature and requires caution when handling; and

"**Undiluted Gases**" means the flue gas stream which contains oxygen, carbon monoxide, total hydrocarbons and all contaminants in the same concentrations as they exist in the flue gas stream emerging from an individual piece of equipment, such as the combustion chamber of one Boiler or one baghouse, and into which gas stream no ambient air and/or no other gas stream originating from another piece of equipment, except for dilution air introduced within the CEM Systems, has been introduced.

You are hereby notified that this approval is issued to you subject to the terms and conditions outlined below:

GENERAL PROVISIONS

1. GENERAL

Compliance

(1) The Owner shall ensure compliance with all the conditions of this Certificate and shall ensure that any person authorized to carry out work on or operate any aspect of the Site, including the Works, is notified of this Certificate and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

(2) Any person authorized to carry out work on or operate any aspect of the Site shall comply with the conditions of this Certificate.

Build in Accordance

(3) (a) Except as otherwise provided by this Certificate, the Site shall be designed, developed, built, operated, monitored, inspected and maintained in accordance with the following applications:

(i) Applications for a Certificate of Approval (Air) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of

Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the Supporting Documentation listed in the attached Schedule "A".

(ii) Applications for a Provisional Certificate of Approval (Waste Disposal Site) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the Supporting Documentation listed in the attached Schedule "A".

(iii) Applications for a Certificate of Approval of Municipal and Private Sewage Works dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the Supporting Documentation listed in the attached Schedule "A".

(b) (i) Any design optimization or modification that is inconsistent with the conceptual design set out in the Supporting Documentation in Schedule "A" shall be clearly identified, along with an explanation of the reasons for the change and submitted to the Director for approval.

(ii) If a change to the conceptual design is submitted to the Director for approval, no construction of the Site shall commence prior to the Director approving, in writing, the final conceptual design of the Site.

As-built Drawings

(4) (a) Within ninety (90) days of the completion of the initial successful Source Testing program, a set of as-built drawings showing the Facility and the Works and bearing the stamp of a Professional Engineer, shall be prepared and retained at the Site.

(b) These drawings shall be kept up-to-date through revisions undertaken from time to time and a copy shall be retained at the location of the Site or at the operational office of the Owner for the operational life of the Site.

(c) Notwithstanding provisions of Condition 1.(4)(b), an amendment to this Certificate shall be sought for changes to the as-built drawings, requiring approval.

(d) The as-built drawings shall be made available to Ministry staff upon request.

Interpretation

(5) Where there is a conflict between a provision of any document, including the application referred to in this Certificate and the conditions of this Certificate, the conditions in this Certificate shall take precedence.

(6) Where there is a conflict between the applications and a provision in any documents listed in Schedule "A", the applications shall take precedence, unless it is clear that the purpose of the document was to amend the applications and that the Ministry approved the amendment.

(7) Where there is a conflict between any two documents listed in Schedule "A", other than the applications, the document bearing the most recent date shall take precedence.

(8) The requirements of this Certificate are severable. If any requirement of this Certificate, or the application of any requirement of this Certificate to any circumstance, is held invalid or unenforceable, the application of such requirement to other circumstances and the remainder of this Certificate shall not be affected thereby.

Other Legal Obligations

(9) The issuance of, and compliance with the conditions of this Certificate does not:

(a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement; or

(b) limit in any way the authority of the Ministry to require certain steps be taken or to require the Owner to furnish any further information related to compliance with this Certificate.

Adverse Effects

(10) The Site shall be constructed, operated and maintained in a manner which ensures the health and safety of all persons and prevents adverse effects on the natural environment or on any persons.

(11) The Owner shall take steps to minimize and ameliorate any adverse effect on the natural environment or impairment of water quality resulting from the approved operations at the Site, including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.

(12) Despite the Owner or any other person fulfilling any obligations imposed by this Certificate, the person remains responsible for any contravention of any other condition of this Certificate or any applicable statute, regulation, or other legal requirement resulting from any act or emission that caused the adverse effect to the natural environment or impairment of water quality.

(13) If at any time odours, pests, litter, dust, noise or other such negative effects are generated at this Site and cause an adverse effect, the Owner shall take immediate appropriate remedial action that may be necessary to alleviate the adverse effect, including suspension of all waste management activities if necessary.

Change of Ownership

(14) The Owner shall notify the Director in writing, and forward a copy of the notification to the District Manager, within thirty (30) days of the occurrence of any changes:

(a) the ownership of the Site;
(b) the operator of the Site;
(c) the address of the Owner;
(d) the partners, where the Owner is or at any time becomes a partnership and a copy of the most recent declaration filed under the *Business Names Act*, R.S.O. 1990, c. B.17, as amended, shall be included in the notification;
(e) the name of the corporation where the Owner is or at any time becomes a corporation, other than a municipal corporation, and a copy of the most current information filed under the *Corporations Information Act*, R.S.O. 1990, c. C.39, as amended, shall be included in the notification.

(15) No portion of this Site shall be transferred or encumbered prior to or after closing of the Site unless the Director is notified in advance. In the event of any change in ownership of the Site, other than change to a successor municipality, the Owner shall notify the successor of and provide the successor with a copy of this Certificate, and the Owner shall provide a copy of the notification to the District Manager and the Director.

Inspections by the Ministry

(16) No person shall hinder or obstruct a Provincial Officer from carrying out any and all inspections authorized by the *OWRA*, the *EPA*, the *PA*, the *SDWA* or the *NMA* of any place to which this Certificate relates, and without limiting the foregoing:

(a) to enter upon the premises where the approved processing is undertaken, or the location where the records required by the conditions of this Certificate are kept;
(b) to have access to, inspect, and copy any records required to be kept by the conditions of this Certificate;
(c) to inspect the Site, related equipment and appurtenances;
(d) to inspect the practices, procedures, or operations required by the conditions of this Certificate;
(e) to conduct interviews with staff, contractors, agents and assignees of the Owner; and
(f) to sample and monitor for the purposes of assessing compliance with the terms and conditions of this Certificate or the *EPA*, the *OWRA*, the *PA*, the *SDWA* or the *NMA*.

Information

(17) Any information requested by the Ministry, concerning the operation of the Site and its operation under this Certificate, including but not limited to any records required to be kept by this Certificate, manuals, plans, records, data, procedures and supporting documentation shall be provided to the Ministry, in a timely manner, upon request.

(18) The receipt of any information by the Ministry or the failure of the Ministry to prosecute any person or to require any person to take any action, under this Certificate or under any statute, regulation or other legal requirement, in relation to the information, shall not be construed as:

(a) an approval, waiver, or justification by the Ministry of any act or omission of any person that contravenes any term or condition of this Certificate or any statute, regulation or other legal requirement; or

(b) acceptance by the Ministry of the information's completeness or accuracy.

(19) The Owner shall ensure that a copy of this Certificate, in its entirety and including all its Notices of Amendment and the Supporting Documentation listed in Schedule "A" are retained at the Site at all times.

2. **SERVICE AREA, APPROVED WASTE TYPES, RATES and STORAGE**

(1) The service area for the Site is the area within the jurisdictional boundaries of The Regional Municipality of Durham and The Regional Municipality of York.

(2) The operation of this Site is limited to:

(a) receipt, temporary storage, transfer and processing, including thermal treatment, of solid non-hazardous waste remaining after Waste Diversion required by the EA Approval, limited to Waste from the following sources:

(i) domestic waste and Industrial Commercial and Institutional waste from the Regions' curbside collection and/or from the Regions' waste management facilities; and

(ii) waste generated on-Site through activities not relating to the handling and processing of Waste (ie. office, lunch room, etc.);

(b) collection and management of the stormwater run-off generated at the Site.

(3) The following Unacceptable Waste is prohibited from being accepted at the Site:

(a) hazardous waste, as defined in the *O. Reg. 347;*
(b) wastes which have been source-separated for the purposes of diversion;

(c) international waste generated outside of Canada, but collected within the jurisdictional boundaries of The Regional Municipality of Durham and The Regional Municipality of York.

(4) Waste Receipt Rate:

(a) The maximum daily amount of Waste that is approved to be accepted at the Site shall not exceed 1,520 tonnes per day.

(5) Storage Restrictions:

Solids:

(a) A maximum of 7,350 cubic metres shall be stored inside the Waste pit within the Tipping Building as shown in the Supporting Documentation.

(b) Rejected Waste, limited to the Bulky Unprocessable Items removed from the incoming Waste in the Tipping Building shall be stored:

(i) in two (2) roll-off bins having a maximum total storage capacity of 30 cubic metres, located within the confines of the Tipping Building; and/or

(ii) in the appropriate dedicated bunkers, located within the confines of the Residue Building and described in Conditions 2.(5)(c), 2.(5)(d) and 2.(5)(d), below.

(c) A maximum of approximately 77 tonnes or 106 cubic metres of the Residual Waste, limited to the recovered ferrous metals, shall be stored in one (1) dedicated bunker, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of seven (7) days.

(d) A maximum of approximately 120 tonnes or 100 cubic metres of the Residual Waste, limited to the recovered non-ferrous metals, shall be stored in one (1) dedicated bunker, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of seven (7) days.

(e) A maximum of 630 tonnes of the Residual Waste, limited to bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of seven (7) days.

(f) A maximum of 700 tonnes of the Residual Waste, limited to the fly ash shall be stored in seven (7) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of thirty six (36) days.

(g) A maximum of 85 cubic metres of activated carbon for the carbon injection system shall be stored in one (1) outdoor tank, located adjacent to the APC Building.

(h) A maximum of 150 cubic metres of lime for the dry scrubber shall be stored in one (1) or more indoor tank(s), located within the confines of the APC Building.

(i) If required, recirculated residue shall be stored in one (1) or more indoor tank(s), located within the confines of the APC Building.

(j) A maximum of 35 tonnes or 25 cubic metres of cement for fly ash conditioning shall be stored in one (1) outdoor silo, located adjacent to the Residue Building.

(k) A maximum of 25 tonnes or 45 cubic metres of pozzolan for fly ash conditioning shall be stored in one (1) outdoor silo, located adjacent to the Residue Building.

Liquids:

(l) (i) A maximum of 36 cubic metres or 40 tonnes of aqueous ammonia for the SNCR System shall be stored in one (1) outdoor tank, located adjacent to the APC Building.

(ii) The Owner shall ensure that the aqueous ammonia storage tank is equipped with a liquid level monitoring device designed to provide a visual and an auditory alarm when the high level setpoint is reached.

(iii) The aqueous ammonia storage tank spill containment area and the loading area shall be designed in accordance with the requirements in the Ministry's document entitled *"Guidelines for Environmental Protection Measures at Chemical and Waste Storage Facilities"* dated May 2007, as amended.

(6) No outdoor storage of waste, including storage in vehicles, is approved under this Certificate.

(7) The Owner shall ensure that storage of all wastes is undertaken in a manner that does not cause an adverse effect or a hazard to the environment or any person.

(8) (a) Waste received at the Site shall be processed within four (4) days from its receipt at the Site.

(b) Emergency Waste storage duration extension:

(i) The Owner may store the incoming Waste inside the tipping pit within the confines of the Tipping Building for up-to seven (7) days from its receipt at the Site, on an emergency basis only.

(ii) Within twenty four (24) hours from the start of the emergency storage of the incoming Waste, the Owner shall notify, in writing, the District Manager that the incoming Waste is being stored longer then four (4) days.

(iii) Should there be public complaints about the extended incoming Waste storage, the Owner, in consultation with the District Manager, shall determine the cause of the complaints, propose appropriate abatement measures, including but not be limited to the removal and off-site disposal of the Waste contained in the tipping pit, and implement the said measures upon receiving written concurrence from the District Manager within the time frame acceptable to the District Manager.

(9) In the event that Waste cannot be processed at the Site and the Site is at its approved storage capacity, the Owner shall cease accepting additional Waste. Receipt of additional Waste may be resumed once such receipt complies with the waste storage limitations approved in this Certificate.

3. **SIGNS and SITE SECURITY**

(1) Prior to receipt of Waste at the Site, the Owner shall ensure that a sign is posted at the entrance to the Site. The sign shall be visible from the main road leading to the Site. The following information shall be included on the sign:

(a) name of the Owner;
(b) this Certificate number;
(c) hours during which the Site is open;
(d) waste types that are approved to be accepted at the Site;
(e) Owner's telephone number to which complaints may be directed;
(f) Owner's twenty-four hour emergency telephone number (if different from above);
(g) a warning against unauthorized access; and
(h) a warning against dumping at the Site.

(2) The Owner shall ensure that appropriate and visible signs are posted at the Site clearly identifying the wastes and the process reagents and stating warnings about the nature and any possible hazards of the wastes and the reagents.

(3) The Owner shall ensure that appropriate and visible signs are posted at the Site to prohibit smoking, open flames or sources of ignition from being allowed near any flammable materials storage areas.

(4) The Owner shall install and maintain appropriate and visible signs at the Site to direct vehicles to the Waste receiving and Residual Waste removal areas and to the reagent unloading areas.

(5) The Owner shall post appropriate and visible signs along the traffic route providing clear directions to the Site.

(6) The Owner shall ensure that the Site is fenced in and that all entrances are secured by lockable gates to restrict access only to authorized personnel when the Site is not open.

(7) The Owner shall ensure that access to the Site, with the exception of the area designated as a Public Information Centre, is regulated and that no unauthorized persons are permitted at the Site without the Trained Personnel escort.

(8) The Owner shall ensure that the Site is operated in a safe and secure manner, and that Waste, the Residual Waste and the Unacceptable Waste are properly handled, packaged or contained and stored so as not to pose any threat to the general public and the Site personnel.

4. **SITE OPERATIONS**

(1) **Operating hours:**

(a) The Site is approved to operate twenty-four (24) hours per day three hundred and sixty-five (365) days per year.

(b) Notwithstanding Condition 4.(1)(a), Waste shall only be received at the Site and the Residual Waste shall only be transferred from the Site between 7:00 a.m. and 7:00 p.m. Monday to Saturday. No receipt of the Waste or transfer of the Residual Waste shall be undertaken on statutory holidays.

(c) Emergency Receipt of Waste:

(i) The Owner may receive Waste at the Site outside of the operating hours specified in Condition 4.(1)(b), above, on an emergency basis only.

(ii) Within twenty four (24) hours from the receipt of Waste outside of the approved receiving hours, the Owner shall notify, in writing, the District Manager that Waste was received outside of the approved receiving hours.

(iii) Should there be complaints about Waste shipments outside of the approved hours, the Owner, in consultation with the District Manager, shall determine the cause of the complaint, propose appropriate abatement measures and implement the said measures upon receiving written concurrence from the District Manager within the time frame acceptable to the District Manager.

(2) **Incoming Waste receipt:**

(a) At the weigh scale, the Trained Personnel shall:

(i) inspect the required documentation prior to acceptance of the incoming Waste at the Site; and

(ii) inspect the incoming Waste with radiation detection equipment.

(b) In the Tipping Building, the Trained Personnel shall:

(i) visually inspect all incoming Waste being unloaded into the Waste pit; and

(ii) once per hour, or as accepted by the District Manager, unload the incoming Waste on the tipping floor for a manual visual inspection and sorting of the incoming Waste.

(c) The Owner shall only accept the incoming Waste that is delivered in vehicles that have been approved by the Ministry.

(d) The Owner shall ensure that all unloading of incoming Waste at the Site takes place entirely within the confines of the Tipping Building.

(3) **Unacceptable Waste handling:**

(a) In the event that waste that is not approved under this Certificate is inadvertently accepted at the Site, the Owner shall ensure that the Unacceptable Waste:

(i) is stored in a way that ensures that no adverse effects result from its storage;
(ii) is segregated from all other waste;
(iii) is handled and removed from the Site in accordance with the *O. Reg. 347* and the *EPA*; and
(iv) is removed from the Site within (4) days of its receipt or as acceptable to the District Manager.

(b) The Owner shall ensure that all loading of the Unacceptable Waste into transport vehicles is carried out entirely within the confines of the Tipping Building.

(4) **Waste Sorting:**

(a) The Trained Personnel shall remove the Bulky Unprocessable Items and Unacceptable Waste from the incoming Waste prior to charging of the Waste to the Boilers.

(b) All sorting of the incoming Waste at the Site shall be undertaken indoors, within the confines of the Tipping Building and/or the Refuse Building.

(5) **Residual Waste Handling and Disposal:**

(a) (i) Except for transportation of the Residual Waste between the Grizzly Building and the Residue Building, the Owner shall ensure that all

handling of the bottom ash and its segregated constituents, and of the fly ash, is undertaken within the confines of enclosed conveyors and enclosed buildings.

(ii) The Owner shall ensure that all loading of the Residual Waste into vehicles for its transport from the Site is carried out entirely within the confines of the Residue Building.

(b) (i) Different constituents of the Residual Waste shall not be comingled prior to the required compliance testing, unless all Residual Waste is to be disposed of at a Waste Disposal Site that is approved to accept hazardous waste.

(ii) The Owner shall ensure that the equipment used in handling of the hazardous wastes or that came in direct contact with the hazardous wastes is not used to handle other wastes.

(iii) On an emergency basis, the Owner may use equipment used to handle the hazardous wastes to handle other wastes provided that prior to such use the equipment has been thoroughly cleaned first.

(c) (i) Only haulers approved by the Ministry shall be used to transport the Residual Waste from the Site.

(ii) The Residual Waste shall be transported from the Site in appropriately covered vehicles that will not allow fugitive dust emissions to be emitted into the natural environment during the said transport.

d) Residual Waste generated at the Site shall be disposed of shall only be disposed of at an approved waste disposal site in accordance with the requirements in the *EPA* and the *O. Reg. 347* or at a location with the appropriate jurisdictional approval or a license, if required.

(e) Should the Residual Waste limited to the conditioned fly ash and/or the bottom ash be deemed a hazardous waste, the ash shall be disposed of at an approved waste disposal site in accordance with the Land Disposal Restrictions requirements in the *EPA* and the *O. Reg.* 347 or at a location with the appropriate jurisdictional approval or a license, if required.

(6) **Wastewater Management**

(a) The Owner shall ensure that all wastewater generated at the Site is contained within enclosed buildings, tanks, pipes and conveyors at the Site and the approved outdoor Wastewater Settling Basin.

(b) The Owner shall ensure that all wastewater generated at the Site is collected in leak-proof and sufficiently designed wastewater storage facilities:

(i) Wastewater Holding Tank, to collect the continuous reject water flow from the Boiler make-up water treatment system and the Boiler blowdown, having an approximate holding capacity of 100 cubic metres, located within the confines of the Boiler Building and venting to the atmosphere; and

(ii) Wastewater Settling Basin, to collect the wastewater from the floor drains in the buildings at the Site, except for the Tipping Building and the Residue Building, the ash discharger overflow and drain water, the Boiler and turbine-generator washdown water and the APC Equipment area washdown water, having an approximate holding capacity of 38 cubic metres, located outdoors, open to the atmosphere and equipped with a filter basket and an oil skimmer board.

(c) The wastewater pumps shall be located in the area designed in accordance with the Supporting Documentation to ensure that any potential leaks or drips are contained and directed to the Wastewater Settling Basin.

(d) (i) The wastewater level in the Wastewater Holding Tank shall be monitored and controlled to ensure that the wastewater inflow to the Tank does not cause the Tank overflow.

(ii) The wastewater level in the Wastewater Settling Basin shall be monitored and controlled to ensure that the atmospheric precipitation does not cause an overflow from the Basin.

(e) The Owner shall regularly empty, and clean as necessary, all sumps, wastewater storage/holding areas and equipment that are used to contain, collect and handling the wastewater generated at the Site.

(f) Should the Owner find it necessary to remove the wastewater from the Site, the wastewater shall only be disposed of at a Ministry-approved site in accordance with the site's certificate of approval or be discharged to the sanitary sewer in accordance with the agreement with the municipality accepting the discharge.

(g) The floors of the Tipping Building and the Residue Building shall be sufficiently sloped to facilitate the flow of the wastewater generated from the floor cleaning activities and from the truck washdown towards the designated wastewater collection area.

(h) The Owner shall ensure that the Wastewater Settling Basin is regularly cleaned out and that it does not become a source of odour emissions.

(7) All activities approved under this Certificate shall only be carried out by appropriately Trained Personnel.

5. EQUIPMENT and SITE INSPECTIONS and MAINTENANCE

Operation and Maintenance

(1) Prior to the receipt of the Waste at the Site, the Owner shall prepare and update as necessary, an Operation and Maintenance Manual for all the Equipment, the APC Equipment, the CEM Systems, the Works and any other equipment associated with managing of the Waste and with the control of environmental impacts from the Facility. The Manual shall be prepared in accordance with the written manufacturer's and/or supplier's specifications and good engineering practice.

As a minimum, the Operation and Maintenance Manual shall specify:

(a) operation procedures of the Equipment, the APC Equipment, the CEM Systems, the Works, and any other equipment associated with managing of the Waste and with the control of environmental impacts from the Facility, in accordance with manufacturers' recommendations and good engineering practices to achieve compliance with this Certificate, the *EPA,* the *OWRA* and their Regulations;
(b) calibration procedures for the CEM Systems as required by this Certificate;
(c) procedures for start-up and shutdown, including Controlled Shutdown and Emergency Shutdown;
(d) quality assurance procedures for the operation and calibration of the CEM Systems in accordance with *40 CFR 60,* Appendix F or *Report EPS 1/PG/7,* as appropriate;
(e) Waste receiving and screening procedures;
(f) Waste, Rejected Waste and Residual Waste handling procedures;
(g) testing and monitoring procedures as required by this Certificate;
(h) maintenance and preventative maintenance procedures as required by this Certificate;
(i) Facility inspection, including frequency of inspections, procedures;
(j) procedure for handling complaints as required by this Certificate.
(k) contingency measures to resolve upset conditions and/or minimize the environmental impacts from the Facility;
(l) emergency response procedures, including procedures for dealing with power failure, fire, explosion, spills and any other potential emergencies;
(m) procedures for record keeping activities as required by this Certificate;
(n) description of the responsibilities of the Site personnel and the personnel training protocols; and
(o) a list of personnel positions responsible for operation and maintenance, including supervisory personnel and personnel responsible for handling of the emergency situations, recording and reporting pursuant to the requirements of this Certificate, along with the training and experience required for the positions and a description of the responsibilities.

(2) A copy of this Operations and Maintenance Manual shall be kept at the Site, be accessible to the Site personnel at all times and be updated, as required. The Operations and Maintenance Manual shall be available for inspection by a Provincial Officer upon request.

(3) The Owner shall implement the operation, maintenance, preventative maintenance and calibration procedures set out in the Operations and Maintenance Manual required by this Certificate.

Critical Spare Parts

(4) (a) The Owner shall prepare a list of critical spare parts, update this list annually or more frequently, if necessary, to ensure that this list is maintained up-to-date and shall be available for inspection by a Provincial Officer upon request.

(b) The Owner shall ensure that the critical spare parts are available at the Site at all times or are immediately available from an off-Site supplier.

Inspections

(5) Prior to receipt of the Waste at the Site, the Owner shall prepare a comprehensive written inspection program which includes inspections of all aspects of the Site's operations including, but not limited to the following:

(a) buildings and the indoor waste storage facilities and presence of dust and odour and leaks in or near any openings, such as doorways, window, vent, louver or any other opening;
(b) outdoor Residual Waste transport equipment, and the presence of dust and leaks at or near transfer points or the equipment seams;
(c) the Equipment, the APC Equipment, the CEM Systems, the Works and any other equipment associated with managing of the Waste and with the control of environmental impacts from the Facility;
(d) spill containment areas, loading areas and the conditions around the Wastewater Settling Basin;
(e) security fencing, gates, barriers and signs;
(f) off-site nuisance impacts such as odour, dust, litter, etc.
(g) presence of stormwater pooling at the Site; and
(h) condition of the on-Site roads for presence of leaks and drips from the waste delivery trucks or excessive dust emissions.

(6) The inspections, except for the inspection of the Works, are to be undertaken daily by the Trained Personnel in accordance with the inspection program to ensure that the Facility is maintained in good working order at all times and that no off-Site impacts are occurring. Any deficiencies detected during these regular inspections must be promptly corrected.

Inspections and Maintenance of the Works

(7) The Owner shall inspect the Works at least once a year and, if necessary, clean and maintain the Works to prevent the excessive build-up of sediments and/or vegetation.

6. PERFORMANCE REQUIREMENTS

(1) The Owner shall, ensure that the Facility/Equipment is designed and operated in such a manner as to ensure that the following Performance Requirements are met:

(a) the maximum 10-minute average concentration of odour at the most impacted Sensitive Receptor, resulting from the operation of the Facility/Equipment, calculated in accordance with the procedures outlined in the attached Schedule "B", shall not exceed 1 odour unit;

(b) the noise emissions from the Facility shall comply with the limits set out in Ministry *Publication NPC-205;*

(c) the vibration emissions from the Facility shall comply with the limits set out in Ministry *Publication NPC-207.*

(2) The Owner shall ensure that the Boilers and the associated APC Equipment and the CEM Systems are designed and operated in such a manner as to ensure that the following Performance Requirements are met:

(a) (i) The temperature in the combustion zone of each Boiler shall reach a minimum of 1000 degrees Celsius (°C) for one second, prior to introduction of the Waste into the combustion chamber of the Boiler during the start-up, and thereafter maintained during the entire thermal treatment cycle and subsequent shutdown until all Waste combustion is completed.

(ii) Compliance with the minimum temperature requirement shall be demonstrated by direct measurement at the location where the combustion gases have achieved the residence time of one second at a minimum temperature of 1000°C (the Target Location) or by correlation of the required temperature of 1000°C for one second to the temperature measured downstream of the Target Location as proven by a method acceptable to the Director.

(b) The concentration of residual oxygen in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, as measured and recorded by the CEM System, shall not be less than 6 percent by volume on a dry basis.

(c) (i) The operational target for the concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler is 40 milligrams per dry cubic metre, as a 4-hour rolling average, normalized to 11 percent oxygen at a reference temperature of 25°C and a reference pressure of 101.3 kilopascals, as measured and recorded by the CEM System, for the period from and including initial commissioning of the facility to twelve months following the completion of the first Source Testing program.

(ii) The 4-hour average concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, as measured and recorded by the CEM System, shall not be more than 40 milligrams per dry cubic metre, normalized to 11 percent oxygen at a reference temperature of 25°C and a reference pressure of 101.3 kilopascals, after the first twelve months following the completion of the first Source Testing program.

(d) The emissions from the Boilers after those emissions have been controlled by the associated APC Equipment for discharge into the atmosphere via the Stack shall comply with the emission concentration limits listed in the attached Schedule "C", as measured by a CEM System or by Source Testing as applicable.

(e) The Boilers shall include combustion air control systems, which are capable of automatically adjusting the distribution and the quantity of combustion air, in such a manner that changes in the Waste Processing Rate and/or Waste composition or irregularities in the loading and/or combustion shall not adversely affect the performance of the Boilers.

(f) The Boilers shall provide and maintain a high degree of gas turbulence and mixing in the combustion chamber.

(g) The Boilers shall achieve the temperature, oxygen availability and turbulence requirements over the complete range of operating parameters, including feed rate, feed characteristics, combustion air, flue gas flow rate and heat losses.

(h) The inlet temperature into each baghouse of the APC Equipment of the Boilers shall not be less than 120°C and not more than 185°C.

(3) The Owner shall install and maintain visual and audible alarm systems to alert the Facility/Equipment operators of any potential deviation from the above Performance Requirements for parameters that are continuously monitored by applicable CEM Systems and shall forthwith take all reasonable actions to bring the Equipment/Facility into compliance with all Performance Conditions.

(4) In the event that the CEM Systems indicate that emissions from the Boilers and the Stack exceed any Performance Requirements in the attached Schedule "C" for a continuous three (3) hour period, the Owner shall forthwith cut-off all Waste feed into the affected Boiler and initiate an Emergency Shutdown, while maintaining a temperature of 1000°C, as practicable, in the combustion zone of the Boiler.

Residual Waste Compliance Criteria

(5) (a) The Residual Waste generated at the Site and destined for a non-hazardous waste disposal site in Ontario shall not meet any of the criteria from the definition of "hazardous waste" set out in the *O. Reg. 347.*

(b) The Residual Waste that meets any of the criteria from the definition of "hazardous waste" set out in the *O. Reg.* 347 shall be handled and disposed of in accordance with the LDR requirements set out in the *EPA* and the *O. Reg. 347.*

(6) The Residual Waste, limited to the bottom ash, destined for a non-hazardous waste disposal site shall meet the definition of "incinerator ash" set out in the *O. Reg. 347.*

7. TESTING, MONITORING and AUDITING

Source Testing

(1) The Owner shall perform annual Source Testing in accordance with the procedures and schedule outlined in the attached Schedule "E", to determine the rate of emission of the Test Contaminants from the Stack. The first Source Testing program shall be conducted not later than six (6) months after the Commencement Date of Operation of the Facility/Equipment and subsequent Source Testing program shall be conducted once (1) every calendar year thereafter.

Continuous Monitoring

(2) The Owner shall select, test and install appropriate CEM Systems and continuous recording devices in accordance with the requirements outlined in the attached Schedule "F" to conduct and maintain a program to continuously monitor, as a minimum, the following parameters prior to commencement of operation of the Boilers:

(a) the temperature at one (1) second downstream of the combustion zone of each Boiler where most of the combustion has been completed and the combustion temperature is fully developed;

(b) the inlet temperature of the gases into each baghouse of the APC Equipment of each Boiler;

(c) the concentration of carbon monoxide, oxygen and organic matter (as methane) in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler;

(d) the opacity and moisture content of the flue gas and the concentration of oxygen, nitrogen oxides, sulphur dioxide, hydrogen chloride, hydrogen fluoride and ammonia in the Undiluted Gases leaving the baghouse of the APC Equipment of each Boiler.

Long-Term Sampling for Dioxins and Furans

(3) (a) The Owner shall develop, install, maintain and update as necessary a long-term sampling system, with a minimum monthly sampling frequency, to measure the concentration of Dioxins and Furans in the Undiluted Gases leaving the APC Equipment associated with each Boiler. The performance of

this sampling system will be evaluated during the annual Source Testing programs in accordance with the principles outlined by 40 CFR 60, Appendix B, Specification 4.

(b) The Owner shall evaluate the performance of the long-term sampling system in determining Dioxins and Furans emission trends and/or fluctuations as well as demonstrating the ongoing performance of the APC Equipment associated with the Boilers.

Ambient Air Monitoring

(4) (a) The Regions shall develop and implement the Ambient Air Monitoring and Reporting Plan, in accordance with the requirements set out in the EA Approval and as determined to be acceptable by the Regional Director.

(b) The Regions shall report the results of the Ambient Air Monitoring program to the Regional Director in accordance with the Ambient Air Monitoring and Reporting Plan and in accordance with the requirements of Condition 14.

(c) The Regions shall post the Ambient Air Monitoring and Reporting Plan and the results of the Ambient Air Monitoring program on the Owner's web site for the Facility in accordance with the requirements of the EA Approval and Condition 15.

Noise Monitoring - Acoustic Audit

(5) The Owner:

(a) shall carry out Acoustic Audit measurements on the actual noise emissions due to the operation of the Facility. The Acoustic Audit measurements shall be carried out in accordance with the procedures in *Publication NPC-103* and in accordance to the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director;

(b) shall submit an Acoustic Audit Report on the results of the Acoustic Audit, prepared by an Independent Acoustical Consultant, in accordance with the requirements of *Publication NPC-233* and the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director, to the District Manager and the Director, not later than three (3) months after the commencement of operation of the Facility.

(6) The Director:

(a) may not accept the results of the Acoustic Audit if the requirements of *Publication NPC-233* or the approved Noise Monitoring and Reporting Plan were not followed;

(b) may require the Owner to repeat the Acoustic Audit if the results of the Acoustic Audit are found unacceptable to the Director.

Residual Waste Testing

(7) (a) A minimum of six (6) months prior to the Commencement Date of Operation, the Owner shall submit to the Director for approval, a Testing Protocol for testing of the bottom ash for compliance with the criteria set out in the "incinerator ash" definition from the *O. Reg.* 347 and for testing of the Residual Waste for compliance with the criteria set out in this Certificate.

(b) As a minimum, the Testing Protocol shall comply with the Ministry's regulatory requirements for sampling and testing of waste, including the requirements set out in the Ministry's document entitled "Principles of Sampling and Analysis of Waste for TCLP under Ontario Regulation 347", dated February 2002, as amended.

(c) The Testing Protocol shall include the rationale for the proposed methods and the following:

(i) a sampling protocol, including the proposed number of samples to be taken and their locations, to ensure that representative sample(s) are being tested for compliance with this Certificate;

(ii) sample(s) handling and preserving procedures;

(iii) analytical protocol for the applicable contaminants to ensure that appropriate analytical method(s) are being used for compliance testing required by this Certificate; and

(iv) a testing protocol for the bottom ash during the Site commissioning period.

(d) The Owner shall implement the Testing Protocol on the Commencement Date of Operation.

(8) For handling of the bottom ash as a solid non-hazardous waste, the Owner shall follow the following schedule for compliance testing:

(a) for the Site commissioning period, the bottom ash shall be tested in accordance with the Testing Protocol approved by the Director;

(b) for the period following the Site commissioning period, the bottom ash shall be tested for the content of the combustible materials on an annual basis, until the compliance testing results indicate that the bottom ash meets the "incinerator ash" definition from the *O. Reg. 347* for three (3) consecutive years, following which a triennial compliance testing event may be carried out;

(c) should any annual or triennial compliance testing event indicate that the bottom ash does not meet the "incinerator ash" definition, prior to each of the next three (3) shipments from the Site, compliance testing of each of the three (3) shipments shall be carried out. Once three (3) consecutive tests re - establish compliance with the "incinerator ash" definition from the *O. Reg. 347* and that the bottom ash does not exceed the Leachate Toxicity Criteria, the compliance testing schedule set out in Condition 7.(8)(b) may be resumed; and

(d) should the results of any compliance testing of the bottom ash indicate that the concentrations of the leachate toxic contaminants in the bottom ash equal to or exceed the Leachate Toxicity Criteria, the bottom ash shall be handled as a hazardous waste. Once three (3) consecutive tests re - establish that the bottom ash does not exceed the Leachate Toxicity Criteria, the bottom ash compliance testing schedule set out in Condition 7.(8)(b) may be resumed.

(9) (a) For handling of the bottom ash as a hazardous waste and for handling of the fly ash, prior to final disposal at a hazardous waste landfill site in Ontario, the Owner shall undertake any sampling and testing that would be required to comply with the LDR requirements set out in the *EPA* and the *O. Reg. 347.*

(b) The Owner shall follow the following schedule for compliance testing:

(i) prior to each of the first three (3) shipments of the ash from the Site, the ash shall be tested so that for the compliance with the LDR requirements can be demonstrated;

(ii) following the three (3) initial compliance testing events, the ash shall be tested on an annual basis, until the compliance testing results indicate that the ash meets the LDR requirements during the three (3) consecutive years, following which a triennial compliance testing may be carried out; and

(iii) should any annual or triennial compliance testing event indicate that the ash does not meet the LDR requirements, prior to next three (3) shipments from the Site, compliance testing of each of the three (3) shipments shall be carried out. Once three (3) consecutive tests re - establish compliance with the LDR requirements, the compliance testing schedule set out in Condition 7.(9)(b)(ii) may be resumed.

Soil Testing:

(10) (a) Within one hundred and twenty (120) days from the date of this Certificate, the Regions shall undertake the soil testing in accordance with the Soil Testing Plan required by this Certificate.

(b) The soil testing shall be repeated every three (3) years or as agreed upon in writing by the Regional Director.

Disposal of Residual Waste

(11) The Owners shall ensure that no portion of the Residual Waste undergoing compliance testing is transferred from the Site until the results of the compliance testing required by this Certificate demonstrate compliance with the relevant Ministry's requirements.

(12) Bottom ash that is not a hazardous waste, as defined in the *O. Reg. 347,* may be disposed of at an approved non-hazardous waste landfill site or at a site approved to accept such waste by an appropriate government agency of equivalent jurisdiction.

(13) Residual Waste shall be treated to comply with the LDR requirements set out in the *EPA* and the *O. Reg. 347* prior to disposal of at an approved hazardous waste landfill site or at a site approved to accept such waste by an appropriate government agency of equivalent jurisdiction.

Groundwater and Surface Water Monitoring

(14) (a) The Regions shall develop and implement the Groundwater and Surface Water Monitoring Plan, in accordance with the requirements set out in the EA Approval and as determined to be acceptable to the Regional Director.

(b) The Regions shall report the results of the Groundwater and Surface Water Monitoring program to the Regional Director and to the Director in accordance with the schedule set out in the EA Approval and in accordance with the requirements of Condition 14.

(c) The Regions shall post the Groundwater and Surface Water Monitoring Plan and the results of the Groundwater and Surface Water Monitoring program on the Owner's web site for the Facility in accordance with the requirements of the EA Approval and Condition 15.

8. NUISANCE IMPACT CONTROL and HOUSEKEEPING

Odour Management

(1) (a) The Owner shall maintain a negative air pressure atmosphere in the Tipping Building at all times to contain any potential odours within the confines of the Tipping Building.

(b) (i) Once per year, or as required by the District Manager, the Owner shall undertake a test to measure the worse case scenario negative air pressure atmosphere throughout the Tipping Building, while the activities approved in this Certificate are carried out in the Tipping Building.

(ii) Notwithstanding the requirements set out in Condition 8.(1)(b)(i), the Owner shall install sufficient instrumentation to measure the air flow into the Boilers and demonstrate that adequate air flow is maintained

to maintain a negative air pressure atmosphere throughout the Tipping Building.

(c) In the event that adequate negative air pressure cannot be maintained, the Owner shall implement any necessary additional odour containment and control measures, including, but not necessarily limited to, those in the required Contingency and Emergency Response Plan.

(2) The Owner shall ensure that the entrance and exit doors into the Tipping Building, the Residue Building and the Grizzly Building are kept closed at all times except to permit the entry or exit of the respective waste transport vehicles and waste handling equipment into and out of these Buildings.

(3) The Owner shall ensure that, at all times, the air from the Tipping Building, the Residue Building, the Grizzly Building and from the Equipment is exhausted through an appropriate and fully functional APC Equipment approved by this Certificate.

(4) The Owner shall undertake appropriate housekeeping activities, including regular cleaning of the tipping floor to control potential sources of fugitive odour emissions.

(5) The Owner shall ensure that no Waste handling equipment or empty storage containers are stored outside, unless they have been washed to prevent fugitive odour emissions.

(6) The Owner shall regularly clean all equipment and storage areas that are used to handle, process and store waste at the Site, including the surfaces of the outdoor spill containment areas, as required.

(7) (i) Prior to the receipt of Waste at the Site, the Owner shall provide documentation which outlines the testing carried out by a licensed structural engineer to confirm the effectiveness of the containment in the buildings, conveyors and tanks and silos at the Site.

(ii) The testing shall be carried out and repeated as directed by the District Manager in accordance with the test protocol prepared in consultation with and approved by the District Manager.

(iii) These tests shall be repeated as directed or agreed by the District Manager.

(8) The Owner shall prepare and implement an Odour Management and Mitigation Plan in accordance with the requirements set out in the EA Approval and as determined to be acceptable to the Regional Director.

(9) (a) In addition to the requirements set out in the EA Approval, the Odour Management and Mitigation Plan shall include the following:

(i) identification of all potential sources of odourous emissions;

(ii) description of the preventative and control measures to minimize odourous emissions from the identified sources;
(iii) procedures for the implementation of the Odour Management and Mitigation Plan;
(iv) inspection and maintenance procedures to ensure effective implementation of the Odour Management and Mitigation Plan; and
(v) procedures for verification and recording the progress of the implementation of the Odour Management and Mitigation Plan.

(b) The Owner shall continue to submit an updated Odour Management and Mitigation Plan until such time as the Regional Director notifies the Owner in writing that further submissions are no longer required.

Vehicles and Traffic

(10) (a) The Owner shall ensure that all vehicles transporting waste to and from the Site are not leaking or dripping waste when arriving at or leaving the Site.

(b) Should the Owner become aware that the truck(s) delivering waste to the Site have leaked wastewater on the municipal roadways, the Owner shall immediately report the violation to the owner of the vehicle(s) and to the District Manager.

(c) The Owner shall ensure that the exterior of all vehicles delivering Waste to the Site or hauling waste from the Site is washed prior to the trucks' departure from the Site, if necessary.

(d) Any necessary truck washing shall occur only in the designated wash down area of the Tipping Building or the Residue Building.

(11) The Owner shall ensure that there is no queuing or parking of vehicles that are waiting to enter the Site on any roadway that is not a distinct part of the Site.

Litter

(12) The Owner shall:

(a) take all practical steps to prevent the escape of litter from the Site;
(b) pick up litter around the Site on a daily basis, or more frequently if necessary; and
(c) if necessary, erect litter fences around the areas causing a litter problem.

Dust

(13) The Owner shall ensure that all on-site roads and operations/yard areas are regularly swept/washed to prevent dust impacts off-Site.

Vermin and Vectors

(14) The Owner shall:

(a) implement necessary housekeeping procedures to eliminate sources and potential sources of attraction for vermin and vectors; and

(b) hire a qualified, licensed pest control professional to design and implement a pest control plan for the Site. The pest control plan shall remain in place, and be updated from time to time as necessary, until the Site has been closed and this Certificate has been revoked.

Visual Screening

(15) The Owner shall provide visual screening for the Site in accordance with the documentation included in the attached Schedule "A".

9. **STAFF TRAINING**

(1) (a) The Owner shall ensure that all operators of the Site are trained with respect to the following, as per the specific job requirements of each individual operator:

(i) terms and conditions of this Certificate and the requirements of the EA Approval;
(ii) operation and management of the Site, or area(s) within the Site, as per the specific job requirements of each individual operator, and which may include procedures for receiving, screening and identifying Waste, refusal, handling, processing and temporarily storing wastes, operation of the Equipment, the APC Equipment, the CEM System and the Works;
(iii) testing, monitoring and operating requirements;
(iv) maintenance and inspection procedures;
(v) recording procedures;
(vi) nuisance impact control and housekeeping procedures;
(vii) procedures for recording and responding to public complaints;
(viii) an outline of the responsibilities of Site personnel including roles and responsibilities during emergency situations;
(ix) the Contingency and Emergency Response Plan including exit locations and evacuation routing, and location of relevant equipment available for emergency situations;
(x) environmental, and occupational health and safety concerns pertaining to the wastes to be handled;
(xi) emergency first-aid information; and
(xii) relevant waste management legislation and regulations, including the *EPA,* the *OWRA,* the *O. Reg. 347,* the *O. Reg. 419/05* and the Ministry guidelines affecting thermal treatment facilities.

(2) The Owner shall ensure that all personnel are trained in the requirements of this Certificate relevant to the employee's position:

(a) upon commencing employment at the Site in a particular position;
(b) whenever items listed in Condition 9.(1) are changed or updated; and
(c) during the planned refresher training.

10. **COMPLAINTS / ODOUR-CONTAMINANT EMISSIONS RESPONSE PROCEDURE**

(1) The Owner or a designated representative of the Owner shall be available to receive public complaints caused by the operations at the Site twenty-four (24) hours per day, seven (7) days per week.

(2) If at any time, the Owner or the Ministry receives a complaint or the Owner or the Provincial Officer detects an emission of odour or any contaminant, (Emission Event), from the Site, in addition to the requirements set out in the EA approval, the Owner shall record all relevant information in the computerized tracking system and shall respond to the complaint/Emission Event according to the following procedure:

Step 1: Record of Complaint/Emission Event

(a) (i) The Owner shall record each complaint/Emission Event and each record shall include the following:

(A) name, address and the telephone number of the complainant, if known;
(B) time and date of the complaint/Emission Event;
(C) details of the complaint; and

(ii) After the complaint/Emission Event has been recorded in the tracking system, the Owner shall immediately report to the District Manager by phone or e-mail during office hours and to the Ministry's Spills Actions Centre at 1-800-268-6060 after office hours on the receipt of the complaint or occurrence of the Emission Event.

Step 2: Investigation and Handling of Complaint/Emission Event

(b) The Owner shall immediately initiate investigation of the complaint/Emission Event. As a minimum, the investigation shall include the following:

(i) determination of the activities being undertaken at the Site at the time of the complaint/Emission Event;
(ii) meteorological conditions including, but not limited to the ambient temperature, approximate wind speed and its direction.
(iii) determination if the complaint is attributed to activities being undertaken at the Site and if so, the possible cause(s) of the complaint/Emission Event; and

(iv) determination of the remedial action(s) to address the cause(s) of the Complaint/Emission Event, and the schedule for the implementation of the necessary remedial action(s).

(c) The Owner shall respond to the complainant, if known, and the response shall include the results of the investigation of the Complaint, the action(s) taken or planned to be taken to address the cause(s) of the Complaint, and if any follow-up response(s) will be provided.

(d) Upon completed investigation of the Complaint/Emission event, the Owner shall, within three (3) business days, submit a report to the District Manager on the Complaint, on the action(s) taken or planned to be taken to address the cause(s) of the Complaint and on all proposed action(s) to prevent recurrence of the Complaint/Emission Event in the future.

(3) If, in the opinion of the District Manager, failure of the APC Equipment and/or any other process or equipment upset or malfunction results in off-site Complaint/Emission Event, confirmed by the Owner or a Provincial Officer of the Ministry, the Owner shall, immediately upon notification from the District Manager, implement any necessary additional control measures, including, but not necessarily limited to, those in the Contingency and Emergency Response Plan required by this Certificate.

(4) If the District Manager deems the additional control measures taken as per condition 10.(3) to be unsuitable, insufficient or ineffective, the District Manager may direct the Owner, in writing, to take further measures to address the noted failure, upset or malfunction including pursuant to section 39 of the *EPA* requiring a reduction in the receipt of Waste, cessation of the receipt of Waste, removal and off-site disposal of Waste from the Tipping Building as well as making repairs or modifications to equipment or processes.

11. CONTINGENCY and EMERGENCY RESPONSE PLAN

(1) (a) The Owner shall develop and implement a Contingency and Emergency Response Plan in accordance with the requirements set out in the EA Approval.

(b) Notwithstanding the requirements set out in the EA Approval, the Contingency and Emergency Response Plan shall be prepared in consultation with the District Manager or designate, the local Municipality and the Fire Department.

(2) In addition to the requirements set out in the EA Approval, the Contingency and Emergency Response Plan, as a minimum, shall include the following:

(a) the Site plan clearly showing the equipment layout and all storage areas for wastes and reagents;

(b) a list of Site personnel responsible for the implementation of the contingency measures and various emergency response tasks and their training requirements;
(c) a list of equipment and materials required for the implementation of the contingency measures and the emergency situation response;
(d) maintenance and testing program for equipment required for the implementation of the contingency measures and the emergency situation response;
(e) procedures to be undertaken as part of the implementation of the contingency measures and the emergency situation response;
(f) names and telephone numbers of waste management companies available for emergency response;
(g) notification protocol, with names and telephone numbers of persons to be contacted, including the Owner, the Site personnel, the Ministry of the Environment Spills Action Centre and the York Durham District, the local Fire and Police Departments, the local Municipality, the local Medical Officer of Health, and the Ministry of Labour;
(h) procedures and actions to be taken should the incoming Waste not meet the applicable quality criteria specified in this Certificate;
(i) procedures and actions to be taken should the outgoing Residual Waste fail to meet the criteria specified in this Certificate;
(j) procedures and actions to be taken should the current disposal options for the outgoing Residual Waste become unavailable;
(k) design of the contingency measure, procedures and actions should the emissions from the Site, including the fugitive odour/dust emissions, cause occurrences of public Complaints;
(l) procedures and actions to be taken should the Owner be unable to maintain the negative pressure in the Tipping Building;
(m) procedures and actions to be taken should the occurrence of Complaints require the Owner to suspend the waste processing activities at the Site; and
(n) identification and risk assessment of all reasonably foreseeable incidents that may result in a discharge into the natural environment of any contaminant in an amount, concentration or level in excess of that prescribed by the Regulations and/or imposed by this Certificate, including but not limited to:
    (i) a breakdown of the Facility/Equipment or part of the Facility/Equipment, including the APC Equipment and the CEM Systems associated with the Boilers;
    (ii) CEM Systems indicate that the Boilers and associated APC Equipment have been out of compliance with the Performance Requirements;
    (iii) any change in process parameters which may result in non compliance with the Performance Requirements;
    (iv) power failure resulting in the use of the Emergency Diesel Generator or Total Power Failure; and
    (v) description of the preventative and control measures to minimize the occurrence or impacts of the above incidents; and
    (vi) procedures for corrective measures and timelines to take to address the above incidents in a timely manner to effectively prevent or minimize the discharge of any contaminant into the natural environment and continue to maintain compliance with the *EPA* , the Regulations and

this Certificate, including procedures for Waste Processing Rate reduction, waste feed cut-off, Controlled Shutdown or Emergency Shutdown of the Boilers as applicable.

(3) The Owner shall submit the finalized Contingency and Emergency Response Plan to the Director a minimum of one hundred and twenty (120) days prior to the Commencement Date of Operation, for approval.

(4) An up-to-date version of the Contingency and Emergency Response Plan shall be kept at the Site at all times, in a central location available to all staff, and it shall be available for inspection by a Provincial Officer upon request.

(5) The Owner shall ensure that the names and telephone numbers of the persons to be contacted in the event of an emergency situation are kept up-to-date, and that these numbers are prominently displayed at the Site and at all times available to all staff and emergency response personnel.

(6) The Contingency and Emergency Response Plan shall be reviewed on a regular basis and updated, as necessary. The revised version of the Contingency and Emergency Response Plan shall be submitted to the local Municipality and the Fire Department for comments and to the District Manager for comments and concurrence.

(7) The Owner shall implement the recommendations of the updated Contingency and Emergency Response Plan, immediately upon receipt of the written concurrence from the District Manager.

12. **EMERGENCY SITUATION RESPONSE and REPORTING**

(1) The Owner shall immediately take all measures necessary to contain and clean up any spill or leak which may result from the operation at this Site and manage any emergency situation in accordance with the Contingency and Emergency Response Plan.

(2) The Owner shall ensure that the equipment and materials listed in the Contingency and Emergency Response Plan are immediately available at the Site, are in a good state of repair, and fully operational at all times.

(3) The Owner shall ensure that all Site personnel responsible for the emergency situation response are fully trained in the use of the equipment and related materials, and in the procedures to be employed in the event of an emergency.

(4) All Spills as defined in the *EPA* shall be immediately reported to the **Ministry's Spills Action Centre at 1-800-268-6060** and shall be recorded in the log book as to the nature of the emergency situation, and the action taken for clean-up, correction and prevention of future occurrences.

13. **SUBMISSIONS to the REGIONAL DIRECTOR or DISTRICT MANAGER**

(1) The Owner shall notify the District Manager in writing, at least six (60) days prior to the scheduled date for the first receipt of Waste at the Site, as to whether or not the construction of the Facility has been carried out in accordance with this Certificate to a point of Substantial Completion.

(2) (a) The Owner shall forthwith notify the District Manager and the Spills Action Centre by telephone, when any of the following incidents occur that may result in a discharge into the natural environment of any contaminant in an amount, concentration or level in excess of that prescribed by the Regulations and/or imposed by this Certificate:

(i) CEM Systems indicate that the Boilers and associated APC Equipment have been out of compliance with the Performance Requirements triggering a Waste Processing Rate Reduction, Waste Feed cut-off, Controlled Shutdown or Emergency Shutdown as specified in the Emergency Response and Contingency Plan;
(ii) failure of the APC Equipment associated with the Boilers; and
(iii) power failure resulting in the use of the emergency diesel generator or Total Power Failure;

(b) In addition to fulfilling the notification requirements from the *EPA,* the Owner shall prepare and submit a written report to the District Manager with respect to any of the above said occurrences, within five (5) calendar days of the occurrence, in the following format:

(i) date of the occurrence;
(ii) general description of the occurrence;
(iii) duration of the occurrence;
(iv) effect of the occurrence on the emissions from the Facility;
(v) measures taken to alleviate the effect of the occurrence on the emissions from the Facility; and
(vi) measures taken to prevent the occurrence of the same or similar occurrence in the future.

(3) Should a Spill, as defined in the *EPA*, occur at the Site, in addition to fulfilling the requirements from the *EPA* and applicable regulations, the Owner shall submit to the District Manager a written report within three (3) calendar days outlining the nature of the Spill, remedial measure taken and the measures taken to prevent future occurrences at the Site.

(4) (a) Within ninety (90) days from the date of this Certificate, the Regions shall prepare and submit to the District Manager for concurrence, a Soil Testing Plan to monitor the impact of the Site operations at the locations where the ambient air monitoring is proposed by the Owner in accordance with the requirements set out in the EA Approval.

(b) (i) This Plan shall ensure that representative samples of the soil to be tested are collected in sufficient numbers and that the samples are properly preserved and tested so that reliable data on the soil characteristics is collected.

(ii) As a minimum, the Plan shall include testing for cadmium, lead, chromium, nickel, cobalt, copper, molybdenum, selenium, zinc and mercury, Dioxins and Furans.

(iii) This Plan shall comply with the Ministry's regulatory requirements for sampling and testing of soil and it shall include the rationale for the proposed methods.

(iv) This Plan be kept at the Site at all times and be available for inspection by a Provincial Officer upon request.

14. RECORDS KEEPING

(1) Any information requested by the Ministry concerning the Facility and its operation under this Certificate, including, but not limited to, any records required to be kept by this Certificate, shall be provided to the Ministry, upon request, in a timely manner.

(2) The Owner shall retain, for a minimum of seven (7) years from the date of their creation, except as noted below, all reports, records and information described in this Certificate.

Daily Activities

(3) The Owner shall maintain an on-Site written or digital record of activities undertaken at the Site. All measurements shall be recorded in consistent metric units of measurement. As a minimum, the record shall include the following:

(a) date of record and the name and signature of the person completing the report;
(b) quantity and source of the incoming Waste received at the Site;
(c) records of the estimated quantity of Waste thermally treated in the Boilers;
(d) quantity of the Unacceptable Waste received at the Site by the end of the approved Waste receipt period and the type(s) of the Unacceptable Waste received;
(e) quantity and type of the Residual Waste shipped from the Site, including any required outgoing Residual Waste characterization results;
(f) destination and/or receiving site(s) for the Residual Waste shipped from the Site;
(g) quantity and type of any Rejected Waste accepted at the Site;
(h) destination and/or receiving site(s) for the Rejected Waste shipped from the Site;
(i) housekeeping activities, including litter collection and washing/cleaning activities, etc.
(j) amount of electricity produced;

(k) amount of excess electricity exported to the electrical grid.

Monitoring and Testing Records

(4) The Owner shall maintain an on-Site written or digital record of activities undertaken at the Site. All measurements shall be recorded in consistent metric units of measurement. As a minimum, the record shall include the following:

(a) day and time of the activity;
(b) all original records produced by the recording devices associated with the CEM Systems;
(c) a summary of daily records of readings of the CEM Systems, including:
  (i) the daily minimum and maximum 4-hour average readings for carbon monoxide;
  (ii) the daily minimum and maximum one hour average readings for oxygen;
  (iii) the daily minimum and maximum 10-minute average readings for organic matter;
  (iv) the daily minimum and maximum 24-hour average readings for sulphur dioxide;
  (v) the daily minimum and maximum 24-hour average readings for nitrogen oxides;
  (vi) the daily minimum and maximum 24-hour average readings for hydrogen chloride;
  (vii) the daily minimum and maximum 6-minute average and 2-hour average opacity readings; and
  (viii) the daily minimum and maximum one-hour average readings for temperature measurements.
(d) records of all excursions from the applicable Performance Requirements as measured by the CEM Systems, duration of the excursions, reasons for the excursions and corrective measures taken to eliminate the excursions;
(e) all records produced during any Acoustic Audit;
(f) all records produced during any Source Testing;
(g) all records produced by the long term sampling program for Dioxins and Furans required by this Certificate;
(h) all records produced during the Residual Waste compliance testing;
(i) all records produced during the Soil Testing;
(j) all records produced during the Groundwater and Surface Water Monitoring required by this Certificate;
(k) all records produced during the Ambient Air Monitoring required by this Certificate;
(l) all records associated with radiation monitoring of the incoming Waste, including but not limited to:
  (i) transaction number;
  (ii) hauler;
  (iii) vehicle ID;
  (iv) alarm level;
  (v) maximum CPS;
  (vi) uSv/hr;

(vii) comment;
(viii) background CPS;
(ix) driver time in and out; and
(x) name of the Trainer Personnel that carried out the monitoring.

(m) results of the containment testing carried out in the buildings, conveyors, tanks and silos, as required;

(n) results the negative pressure in the Tipping Building carried out, as required.

Inspections/Maintenance/Repairs

(5) The Owner shall maintain an on-Site written or digital record of inspections and maintenance as required by this Certificate. As a minimum, the record shall include the following:

(a) the name and signature of the Trained Personnel that conducted the inspection;
(b) the date and time of the inspection;
(c) the list of any deficiencies discovered, including the need for a maintenance or repair activity;
(d) the recommendations for remedial action;
(e) the date, time and description of actions (repair or maintenance) undertaken;
(f) the name and signature of the Trained Personnel who undertook the remedial action; and
(g) an estimate of the quantity of any materials removed during cleaning of the Works.

Emergency Situations

(6) The Owner shall maintain an on-Site written or digital record of the emergency situations. As a minimum, the record shall include the following:

(a) the type of an emergency situation;
(b) description of how the emergency situation was handled;
(c) the type and amount of material spilled, if applicable;
(d) a description of how the material was cleaned up and stored, if generated; and
(e) the location and time of final disposal, if applicable; and
(f) description of the preventative and control measures undertaken to minimize the potential for re-occurrence of the emergency situation in the future.

Complaints Response Records

(7) The Owner shall establish and maintain a written or digital record of complaints received and the responses made as required by this Certificate.

Training

(8) The Owner shall maintain an on-Site written or digital record of training as required by this Certificate. As a minimum, the record shall include the following:

(a) date of training;
(b) name and signature of person who has been trained; and
(c) description of the training provided.

Reports

(9) The Owner shall keep at the Site the following reports required by this Certificate:

(a) the ESDM Report
(b) the Acoustic Assessment Report;
(c) the Annual Report; and
(d) the Third Party Audit.

15. REPORTING

Annual Report

(1) By March 31st following the end of each operating year, the Owner shall prepare and submit to the District Manager and to the Advisory Committee, an Annual Report summarizing the operation of the Site covering the previous calendar year. This Annual Report shall include, as a minimum, the following information:

(a) a summary of the quality and the quantity of the Wastes accepted at the Site, including the maximum amount of the Waste received annually and daily and the sources of the Waste;

(b) a summary of the quality and the quantity of the Residual Waste shipped from the Site, including the analytical data required to characterize the Residual Waste, the off-Site destinations for the Residual Waste and its subsequent use, if known;

(c) estimated material balance for each month documenting the maximum amount of wastes stored at the Site;

(d) annual water usage;

(e) annual amount of the electricity produced and the annual amount of the electricity exported to the electrical grid;

(f) summaries and conclusions from the records required by Conditions 14.(3) through 14.(8) of this Certificate;

(g) the Emission Summary Table and the Acoustic Assessment Summary Table for the Facility as of December 31 from the previous calendar year;

(h) a summary of dates, duration and reasons for any environmental and operational problems, Boilers downtime, APC Equipment and CEM System malfunctions that may have negatively impacted the quality of the environment or any incidents triggered by the Emergency Response and

Contingency Plan and corrective measures taken to eliminate the environmental impacts of the incidents;

(i) a summary of the dates, duration and reasons for all excursions from the applicable Performance Requirements as measured by the CEM Systems or as reported by the annual Source Testing, reasons for the excursions and corrective measures taken to eliminate the excursions;

(j) results of the evaluation of the performance of the long-term sampling system in determining the Dioxins and Furans emission trends and/or fluctuations for the year reported on as well as demonstrating the ongoing performance of the APC Equipment associated with the Boilers;

(k) dates of all environmental complaints relating to the Site together with cause of the Complaints and actions taken to prevent future Complaints and/or events that could lead to future Complaints;

(l) any environmental and operational problems that could have negatively impacted the environment, discovered as a result of daily inspections or otherwise and any mitigative actions taken;

(m) a summary of any emergency situations that have occurred at the Site and how they were handled;

(n) the results and an interpretive analysis of the results of the groundwater and surface water, including an assessment of the need to amend the monitoring programs;

(o) summaries of the Advisory Committee meetings, including the issues raised by the public and their current status;

(p) any recommendations to improve the environmental and process performance of the Site in the future;

(q) statement of compliance with this Certificate, including compliance with the *O. Reg. 419/05* and all air emission limits based on the results of source testing, continuous monitoring and engineering calculations, as may be appropriate; and

(r) interpretation of the results and comparison to the results from previous Annual Reports to demonstrate the Facility's impact on the environment.

Third Party Audit

(2) (a) The Regions shall ensure that an independent technical review of the operations at the Site is undertaken in accordance with the requirements of the EA Approval.

(b) In addition to the Third Party Audit requirements set out in the EA approval, the Third Party Audit shall include the following:

(i) a review of the data from the monitoring and testing required by this Certificate;
(ii) a review of all complaints received about the operation of the Facility;
(iii) any recommendations for improving the operation of the Facility received from the Advisory Committee; and
(iv) a recommendation of any improvements that could be made to ensure that the operation of the Facility is optimized and is protective of the health and safety of people and the environment.

(3) The Regions shall submit a Written Audit Report on the results of the independent technical review to the Regional Director in accordance with the Audit Plan and retain a copy at the Site.

Soil Testing Report

(4) Within one (1) month of completion of each Soil Testing event, the Regions shall submit to the District Manager a Soil Testing Report, which includes the details on the sampling/testing procedures, the results of the testing and a comparison with the results obtained during the previous Soil Testing.

16. PUBLIC ACCESS TO DOCUMENTATION

(1) The Owner shall, at all times, maintain documentation that describes the current operations of the Facility. The Owner shall post the documentation at the website for the undertaking and during regular business hours, the Owner shall make the following documents available for inspection at the Site by any interested member of the public, upon submission to the Ministry for review:

(a) a current ESDM Report that demonstrates compliance with the Performance Limits for the Facility regarding all Compounds of Concern;

(b) a current Acoustic Assessment Report that demonstrates compliance with the Performance Limits for the Facility regarding noise emissions;

(c) the most recent Annual Report;

(d) the most current Third Party Audit Report;

(e) Odour Management and Mitigation Plan, prepared in accordance with the requirements of the EA Approval;

(f) Noise Monitoring and Reporting Plan, prepared in accordance with the requirements of the EA Approval; and

(g) Groundwater and Surface Water Monitoring and Reporting Plan, prepared in accordance with the requirements of the EA Approval.

(2) The Owner shall ensure that necessary hardware and software are provided at a location available to the public, to provide on-line real-time reporting of the operating parameter data for the Facility, including acceptable operating limits, stack emissions, and all other parameters for which continuous monitoring is required and that continuous records of the same be kept and made available to the public.

17. ADVISORY COMMITTEE

(1) The Regions shall establish an Advisory Committee in accordance with the requirements set out in the EA Approval.

18. CLOSURE of the SITE

(1) A minimum of nine (9) months prior to closure of the Site, the Owner shall submit, for approval by the Director, a written Closure Plan for the Site. This Plan shall include, as a minimum, a description of the work that will be done to facilitate closure of the Site and a schedule for completion of that work.

(2) Within ten (10) days after closure of the Site, the Owner shall notify the Director and the District Manager, in writing, that the Site is closed and that the approved Closure Plan has been implemented.

SCHEDULE "A"

Supporting Documentation

(1) Applications for a Certificate of Approval (Air) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:

(a) Emission Summary and Dispersion Modelling Report, dated March 2011, prepared by Golder Associates;

(b) Acoustic Assessment Report prepared by Golder Associates Ltd., dated March 2011 and signed by Paul Niejadlik.

(2) Applications for a Provisional Certificate of Approval (Waste Disposal Site) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:

(a) Attachment #1 containing the "Design and Operations Report", dated March 2011, prepared by Golder Associates Ltd.;

(b) Attachment #3 containing the "Public Consultation Report", dated March 2011, prepared by Golder Associates Ltd.;

(c) Attachment #4 containing the Host Community Agreement

(d) Attachment #5 containing the proof of legal name for Covanta Durham York Renewable Energy Limited Partnership; and

(e) A letter May 24, 2011 from Anthony Ciccone, Golder Associates Ltd., to Margaret Wojcik, Ontario Ministry of the Environment, providing additional technical information on the proposal and attaching a report entitled "Amendment #1 Durham York Energy Centre Design and Operations Report", dated May 2011;

(3) Applications for a Certificate of Approval of Municipal and Private Sewage Works dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of Durham and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:

(a) "Surface Water and Groundwater Technical Study Report" dated July 2009, prepared by Jacques Whitford, Markham, Ontario (CD Report).

(b) "Stormwater Design Model Output" prepared by Sigma Energy, dated March 2001 (CD Report).

(c) Clearance letter from Central Lake Ontario Conservation date February 22, 2011.

(d) A letter dated March 23, 2011, from Brian Bahor, Covanta Energy Corporation, to Stefanos Habtom, Ontario Ministry of the Environment, providing additional technical design information on the proposed stormwater management ponds.

SCHEDULE "B"

Procedure to calculate and record the 10-minute average concentration of odour at the Point of Impingement and at the most impacted Sensitive Receptor

(a) Calculate and record one-hour average concentration of odour at the Point of Impingement and at the most impacted Sensitive Receptor, employing CALPUFF atmospheric dispersion model or the dispersion model acceptable to the Director that employs at least five (5) years of hourly local meteorological data and that can provide results reported as individual one-hour average odour concentrations.

(b) Convert and record each of the one-hour average concentrations predicted over the five (5) years of hourly local meteorological data at the Point of Impingement and at the most impacted Sensitive Receptor to 10-minute average concentrations using the One-hour Average to 10-Minute Average Conversion described below; and

(c) Record and present the 10-Minute Average concentrations predicted to occur over a five (5) year period at the Point of Impingement and at the most impacted Sensitive Receptor in a histogram. The histogram shall identify all predicted 10-minute average odour concentration occurrences in terms of frequency, identifying the number of occurrences over the entire range of predicted odour concentration in increments of not more than 1/10 of one odour unit. The maximum 10-minute average concentration of odour at the Sensitive Receptor will be considered to be the maximum odour concentration at the most impacted Sensitive Receptor that occurs and is represented in the histogram, disregarding outlying data points on the histogram as agreed to by the Director.

One-hour Average To 10-minute Average Conversion

1. Use the following formula to convert and record one-hour average concentrations predicted by the CALPUFF atmospheric dispersion model or by the dispersion model acceptable to the Director to 10-minute average concentrations:

X10min = X60min*1.65

where X10min = 10-minute average concentration
X60min = one-hour average concentration

SCHEDULE "C"

PERFORMANCE REQUIREMENTS
In-Stack Emission Limits

Parameter	In-Stack Emission Limit	Verification of Compliance
Total Suspended Particulate Matter (filterable particulate measured in accordance with the Ontario Source Testing Code)	9 mg/Rm3	Results from compliance Source Testing
cadmium	7 µg/Rm3	Results from compliance Source Testing
lead	50 µg/Rm3	Results from compliance Source Testing
mercury	15 µg/Rm3	Results from compliance Source Testing
dioxins and furans	60 pg/Rm3	Results from compliance Source Testing; results expressed as I-TEQ
hydrochloric acid (HCl)	9 mg/Rm3	Calculated as the rolling arithmetic average of 24 hours of data measured by a CEM System that provides data at least once every 15 minutes
sulphur dioxide (SO2)	35 mg/Rm3	Calculated as the rolling arithmetic average of 24 hours of data measured by a CEM System that provides data at least once every 15 minutes
nitrogen oxides (NOx)	121 mg/ Rm3	Calculated as the rolling arithmetic average of 24 hours of data measured by a CEM System that provides data at least once every 15 minutes
organic matter (undiluted, expressed as equivalent methane)	50 ppmdv (33 mg/ Rm3)	Results from compliance source testing
carbon monoxide	35 ppmdv (40 mg/Rm3)	Calculated as the rolling arithmetic average of four (4) hours of data measured by a CEM System that provides data at least once every fifteen minutes, in accordance with condition 6 (2) (c)
opacity	10 percent	Calculated as the rolling arithmetic average of six (6) minutes of data measured by a CEM System that provides data at least once every minute
	5 percent	Calculated as the rolling arithmetic average of two (2) hours of data measured by a CEM System that provides data at least once every

		fifteen minutes

mg/Rm3- milligrams per reference cubic metre;

pg/Rm3 - picograms per reference cubic metre

ppmdv parts per million by dry volume,

µg/Rm3 - micrograms per reference cubic metre

R- reference conditions - 25 degrees Celsius, 101.3 kilopascals, dry basis, 11% oxygen

SCHEDULE "D"

TEST CONTAMINANTS

Hydrogen Chloride
Hydrogen Fluoride
Oxides of Nitrogen expressed as Nitrogen Dioxide
Sulphur Dioxide
Total Hydrocarbons, expressed as methane on wet basis
Carbon Dioxide
Total Suspended Particulate Matter (< 44 microns)
Total PM-10 including condensables
Total PM-2.5 including condensables

Metals

Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Copper
Lead
Mercury
Molybdenum
Nickel
Selenium
Silver
Thallium
Vanadium
Zinc

Schedule "D" - Cont'd

Chlorobenzenes	Chlorophenols
Monochlorobenzene (MCB) 1,2-Dichlorobenzene (1,2-DCB) 1,3-Dichlorobenzene (1,3-DCB) 1,4-Dichlorobenzene (1,4-DCB) 1,2,3-Trichlorobenzene (1,2,3-TCB) 1,2,4-Trichlorobenzene (1,2,4-TCB) 1,3,5-Trichlorobenzene (1,3,5-TCB) 1,2,3,4-Tetrachlorobenzene (1,2,3,4-TeCB) 1,2,3,5-Tetrachlorobenzene (1,2,3,5-TeCB) 1,2,4,5-Tetrachlorobenzene (1,2,4,5-TeCB) Pentachlorobenzene (PeCB) Hexachlorobenzene (HxCB)	2-monochlorophenol (2-MCP) 3-monochlorophenol (3-MCP) 4-monochlorophenol (4-MCP) 2,3-dichlorophenol (2,3-DCP) 2,4-dichlorophenol (2,4-DCP) 2,5-dichlorophenol (2,5-DCP) 2,6-dichlorophenol (2,6-DCP) 3,4-dichlorophenol (3,4-DCP) 3,5-dichlorophenol (3,5-DCP) 2,3,4-trichlorophenol (2,3,4-T3CP) 2,3,5-trichlorophenol (2,3,5-T3CP) 2,3,6-trichlorophenol (2,3,6-T3CP) 2,4,5-trichlorophenol (2,4,5-T3CP) 2,4,6-trichlorophenol (2,4,6-T3CP) 3,4,5-trichlorophenol (3,4,5-T3CP) 2,3,4,5-tetrachlorophenol (2,3,4,5-T4CP) 2,3,4,6-tetrachlorophenol (2,3,4,6-T4CP) 2,3,5,6-tetrachlorophenol (2,3,5,6-T4CP) Pentachlorophenol (PeCP)

Schedule "D" - Cont'd

Co-Planar PCBs (Dioxin-like PCBs)	Volatile Organic Matter
PCB-077 (3,3',4,4'-TCB)	Acetaldehyde
PCB-081 (3,4,4',5-TCB)	Acetone
PCB-105 (2,3,3',4,4'-PeCB)	Acrolein
PCB-114 (2,3,4,4',5-PeCB)	Benzene
PCB-118 (2,3',4,4',5-PeCB)	Bromodichloromethane
PCB-123 (2',3,4,4',5-PeCB)	Bromoform
PCB-126 (3,3',4,4',5-PeCB)	Bromomethane
PCB-156 (2,3,3',4,4',5-HxCB)	Butadiene, 1,3 -
PCB-157 (2,3,3',4,4',5'-HxCB)	Butanone, 2 -
PCB-167 (2,3',4,4',5,5'-HxCB)	Carbon Tetrachloride
PCB-169 (3,3',4,4',5,5'-HxCB)	Chloroform
PCB-189 (2,3,3',4,4',5,5'-HpCB)	Cumene
	Dibromochloromethane
	Dichlorodifluoromethane
	Dichloroethane, 1,2 -
	Dichloroethene, Trans - 1,2
	Dichloroethene, 1,1 -
	Dichloropropane, 1,2 -
	Ethylbenzene
	Ethylene Dibromide
	Formaldehyde
	Mesitylene
	Methylene Chloride
	Styrene
	Tetrachloroethene
	Toluene
	Trichloroethane, 1,1,1 -
	Trichloroethene
	Trichloroethylene, 1,1,2 -
	Trichlorotrifluoroethane
	Trichlorofluoromethane
	Xylenes, M-, P- and O-
	Vinyl Chloride

Schedule "D" - Cont'd

Polycyclic Organic Matter	Dioxin/Furan Isomers
Acenaphthylene	
Acenaphthene	2,3,7,8-Tetrachlorodibenzo-p-dioxin
Anthracene	1,2,3,7,8-Pentachlorodibenzo-p-dioxin
Benzo(a)anthracene	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin
Benzo(b)fluoranthene	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin
Benzo(k)fluoranthene	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin
Benzo(a)fluorene	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
Benzo(b)fluorene	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin
Benzo(ghi)perylene	
Benzo(a)pyrene	2,3,7,8-Tetrachlorodibenzofuran
Benzo(e)pyrene	2,3,4,7,8-Pentachlorodibenzofuran
Biphenyl	1,2,3,7,8-Pentachlorodibenzofuran
2-Chloronaphthalene	1,2,3,4,7,8-Hexachlorodibenzofuran
Chrysene	1,2,3,6,7,8-Hexachlorodibenzofuran
Coronene	1,2,3,7,8,9-Hexachlorodibenzofuran
Dibenzo(a,c)anthracene	2,3,4,6,7,8-Hexachlorodibenzofuran
Dibenzo(a,h)anthracene	1,2,3,4,6,7,8-Heptachlorodibenzofuran
Dibenzo(a,e)pyrene	1,2,3,4,7,8,9-Heptachlorodibenzofuran
9,10-Dimethylanthracene	1,2,3,4,6,7,8,9-Octachlorodibenzofuran
7,12-Dimethylbenzo(a)anthracene	
Fluoranthene	
Fluorene	
Indeno(1,2,3-cd)pyrene	
2-Methylanthracene	
3-Methylcholanthrene	
1-Methylnaphthalene	
2-Methylnaphthalene	
1-Methylphenanthrene	
9-Methylphenanthrene	
Naphthalene	
Perylene	
Phenanthrene	
Picene	
Pyrene	
Tetralin	
M-terphenyl	
O-terphenyl	
P-terphenyl	
Triphenylene	

SCHEDULE "E"

SOURCE TESTING PROCEDURES

1. The Owner shall submit, to the Manager a test protocol including the Pre-Test Information required by the Source Testing Code, at least two (2) months prior to the scheduled Source Testing date.

2. (1) For the purpose of the Source Testing program, the Owner is temporarily permitted to operate the Boilers at a residual oxygen concentration below the performance limit outlined in Condition 6.(2)(b) during the period of the Source Testing. The Owner shall ensure that the concentration of residual oxygen in the Undiluted Gases leaving the combustion zone of the Boilers, as measured and recorded by the CEM System, shall not be less than 5 percent by volume on a dry basis, during this Source Testing program.

   (2) If the Source Testing results demonstrate that compliance with the Performance Requirements can be maintained at a residual oxygen concentration below the performance limit outlined in Condition 6.(2)(b), the Owner may apply to the Director for approval to alter the required residual oxygen concentration.

3. The Owner shall finalize the test protocol in consultation with the Manager.

4. The Owner shall not commence the Source Testing until the Manager has accepted the test protocol.

5. The Owner shall complete the first Source Testing not later than six (6) months after Commencement of Operation of the Facility/Equipment.

6. The Owner shall conduct subsequent Source Testing at least once (1) every calendar year thereafter.

7. The Owner shall notify the District Manager and the Manager in writing of the location, date and time of any impending Source Testing required by this Certificate, at least fifteen (15) days prior to the Source Testing.

8. The Owner shall submit a report on the Source Testing programs to the District Manager and the Manager not later than three (3) months after completing each Source Testing program. The report shall be in the format described in the Source Testing Code, and shall also include, but not be limited to:

   (1) an executive summary;
   (2) records of operating conditions; including process description, records of waste composition and feed rate during the Source Testing;
   (3) all records produced by the CEM Equipment;
   (4) procedures followed during the Source Testing and any deviation from the proposed test protocol and the reasons therefore;
   (5) the results of the analyses of the stack emissions;

(6) a summary table that compares the Source Testing results, the monitoring data and the records of operating conditions during the Source Testing to the requirements imposed by the *EPA*, the Regulation and/or the Performance Requirements;

(7) the results of dispersion calculations in accordance with the *O. Reg. 419/05*, indicating the maximum concentration of the Test Contaminants, at the Point of Impingement.

(8) an updated site wide emission source inventory to assess the aggregate point of impingement concentrations of the Test Contaminants.

9. The Owner shall ensure that the Source Testing Report is made available and easily accessible for review by the public at the Facility, immediately after the document is submitted to the Ministry.

10. The Director may not accept the results of the Source Testing if:

(1) the Source Testing Code or the requirements of the Manager were not followed; or

(2) the Owner did not notify the District Manager and the Manager of the Source Testing; or

(3) the Owner failed to provide a complete report on the Source Testing.

11. If the Director does not accept the results of the Source Testing, the Director may require re-testing.

SCHEDULE "F"

PARAMETER:
Temperature

LOCATION:
The sample point for the Continuous Temperature Monitor shall be located at a point where the temperature in the combustion zone of the Boilers has reached at least 1000°C for a period of not less than one second. Compliance shall be proven by direct measurement or/and a correlation between the measured temperature and the intended target proven by a method acceptable to the Director.

PERFORMANCE:
The Continuous Temperature Monitor shall meet the following minimum performance specifications for the following parameters.

	PARAMETERS	SPECIFICATION
1)	Type:	"K", "J" or other type or alternative measurement device with equivalent measurement accuracy and suitable to the temperature range being measured
2)	Accuracy:	± 1.5 percent of the minimum gas temperature

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor without a significant loss of accuracy and with a time resolution of 1 minutes or better. Temperature readings for record keeping and reporting purposes shall be kept as one-hour average values.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 95 percent of the time for each calendar quarter.

PARAMETER:
Carbon Monoxide

INSTALLATION:
The Continuous Carbon Monoxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Range (parts per million, ppm):	0 to ≥100 ppm
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Carbon Monoxide Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤10 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3) Calibration Error:	≤ 2.5 percent of actual concentration
4) System Bias:	≤ 4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 5 percent of span value
7) Span Calibration Drift (24-hour):	≤5 percent of span value
8) Response Time (90 percent response to a step change):	≤180 seconds
9) Operational Test Period:	≥168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

PARAMETER:
Oxygen

INSTALLATION:
The Continuous Oxygen Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of oxygen in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler and in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Range (percentage):	0 - 20 or 0 - 25
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Oxygen Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (percentage):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤10 percent of the mean value of the reference method test data
3) Calibration Error:	0.25 percent O_2
4) System Bias:	≤ 4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 0.5 percent O_2
7) Span Calibration Drift (24-hour):	≤ 0.5 percent O_2
8) Response Time (90 percent response to a step change):	≤ 90 seconds
9) Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better. Oxygen concentration readings for record keeping and reporting purposes shall be kept as one-hour average values.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER:
Hydrogen Chloride

INSTALLATION:
The Continuous Hydrogen Chloride Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of hydrogen chloride in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Range (parts per million, ppm):	0 to ≥100 ppm
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Hydrogen Chloride Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤ 20 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3) Calibration Error:	≤ 2 percent of actual concentration
4) System Bias:	≤ 4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 5 percent of span value
7) Span Calibration Drift (24-hour):	≤ 5 percent of span value
8) Response Time (90 percent response to a step change):	≤ 240 seconds
9) Operational Test Period:	≥168 hours without corrective maintenance

CALIBRATION:
The monitor shall be calibrated daily at the sample point, to ensure that it meets the drift limits specified above, during the periods of the operation of the . The results of all calibrations shall be recorded at the time of calibration.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 5 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER:
Nitrogen Oxides

INSTALLATION:
The Continuous Nitrogen Oxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of nitrogen oxides in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Analyzer Operating Range (parts per million, ppm):	0 to ≥200 ppm
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Nitrogen Oxides Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data
3) Calibration Error:	≤ 2 percent of actual concentration
4) System Bias:	≤4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 2.5 percent of span value
7) Span Calibration Drift (24-hour):	≤ 2.5 percent of span value
8) Response Time (90 percent response to a step change):	≤ 240 seconds
9) Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER:
Sulphur Dioxide

INSTALLATION:
The Continuous Sulphur Dioxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of sulphur dioxide in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1. Range (parts per million, ppm):	0 to ≥100 ppm
2. Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Sulphur Dioxide Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1. Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2. Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data
3. Calibration Error:	≤ 2 percent of actual concentration
4. System Bias:	≤ 4 percent of the mean value of the reference method test data
5. Procedure for Zero and Span Calibration Check:	all system components checked
6. Zero Calibration Drift (24-hour):	≤ 2.5 percent of span value
7. Span Calibration Drift (24-hour):	≤ 2.5 percent of span value
8. Response Time (90 percent response to a step change):	≤ 200 seconds
9. Operational Test Period:	≥168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

PARAMETER:
Total Hydrocarbons

INSTALLATION:
The Total Hydrocarbons Monitor shall be installed at an accessible location where the measurements are representative of the concentrations of Organic Matter (as methane) in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler and shall meet the following installation specifications.

	PARAMETERS	SPECIFICATION
1.	Detector Type:	Flame Ionization
2.	Oven Temperature:	160°C minimum
3.	Flame Temperature:	1800 °C minimum at the corona of the hydrogen flame
4.	Range (parts per million, ppm):	0 to ≥200 ppm
5.	Calibration Gas:	propane in air or nitrogen
6.	Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Total Hydrocarbons Monitor shall meet the following minimum performance specifications for the following parameters.

	PARAMETERS	SPECIFICATION
1.	Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2.	Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3.	System Bias:	≤ 4 percent of the mean value of the reference method test data
4.	Noise:	≤ 1 percent of span value on most sensitive range
5.	Repeatability:	≤ 1 percent of span value
6.	Linearity (response with propane in air):	≤ 3 percent of span value over all ranges
7.	Calibration Error:	≤ 2 percent of actual concentration
8.	Procedure for Zero and Span Calibration Check:	all system components checked on all ranges
9.	Zero Calibration Drift (24-hours):	≤ 2.5 percent of span value on all ranges
10.	Span Calibration Drift (24-hours):	≤ 2.5 percent of span value
11.	Response Time (90 percent response to a step change):	≤ 60 seconds
12.	Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better. Measurements of concentrations of organic matter (as methane) shall be kept as 10 minute average values for record keeping and reporting purposes.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER: Opacity

INSTALLATION: The Continuous Opacity Monitor shall be installed at an accessible location where the measurements are representative of the actual opacity of the Undiluted Gases leaving the APC Equipment associated with each Boiler and shall meet the following design and installation specifications.

	PARAMETERS	**SPECIFICATION**
1)	Wavelength at Peak Spectral Response (nanometres, nm):	500 - 600
2)	Wavelength at Mean Spectral Response (nm):	500 - 600
3)	Detector Angle of View:	≤ 5 degrees
4)	Angle of Projection:	≤ 5 degrees
5)	Range (percent of opacity):	0 -100

PERFORMANCE:
The Continuous Opacity Monitor shall meet the following minimum performance specifications for the following parameters.

	PARAMETERS	**SPECIFICATION**
1)	Span Value (percent opacity):	2 times the average normal opacity of the source
2)	Calibration Error:	≤3 percent opacity
3)	Attenuator Calibration:	≤2 percent opacity
4)	Response Time (95 percent response to a step change):	≤ 10 seconds
5)	Schedule for Zero and Calibration Checks:	daily minimum
6)	Procedure for Zero and Calibration Checks:	all system components checked
7)	Zero Calibration Drift (24-hours):	≤ 2 percent opacity
8)	Span Calibration Drift (24-hours):	≤ 2 percent opacity
9)	Conditioning Test Period:	≥ 168 hours without corrective maintenance
10)	Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
The monitor shall be calibrated, to ensure that it meets the drift limits specified above, during the periods of the operation of the Equipment. The results of all calibrations shall be recorded at the time of calibration.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 30 seconds or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

PARAMETER:
Moisture, Hydrogen Fluoride and Ammonia

Selection and Installation

The Owner shall select and install a CEM System, to measure moisture content of the stack gases, the concentration of hydrogen fluoride and ammonia in the Undiluted Gases leaving the APC Equipment associated with each Boiler, as follows:

a) Design and Performance Specifications shall be in accordance with 40 CFR 60, Appendix B, Specification 4.

b) The Owner shall select the probe locations in compliance with 40 CFR 60, Appendix B, Specification 2.

Test Procedures

The Owner shall verify compliance with the Design and Performance Specifications in accordance with 40 CFR 60, Appendix B, Specification 4, with the reference method for the relative accuracy test being Method 4. of the Source Testing Code.

In furtherance of, but without limiting the generality of the foregoing, the mean difference between the calibration gas value and the analyzer response value at each of the four test concentrations shall be less than 5 percent of the measurement range.

SCHEDULE "G"

A stormwater management facility to service a 10.0 ha drainage area of the Durham York Energy Centre located on the west side of Osbourne Road and north of the CN Rail, Lot 27, Concession Broken Front, Part, Municipality of Clarington, Regional Municipality of Durham, designed to provide quality and quantity control of stormwater run-off by attenuating runoff from storm events up to 1:100 years return frequency to or below the pre-development levels, consisting of:

East Stormwater Management Pond (East SWM Pond)

A stormwater management facility to service a 5.7 ha drainage area comprising of the eastern part of the Durham York Energy Centre consisting of the following:

- one (1) approximately 128 m long drainage ditch collecting stormwater runoff from the north eastern part of the site, having an average horizontal slope of 1.56%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;

- one (1) approximately 199 m long drainage ditch collecting stormwater runoff from the eastern part of the site, having an average horizontal slope of 2.77%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;

- approximately fourteen (14) catch basins/maintenance holes and a total of 466.8 m long 450 mm diameter and 34.6 m of 600 mm diameter corrugated PE stormwater sewers conveying stormwater runoff collected from the north and north eastern part of the site, discharging to a forebay of a wet extended detention stormwater management pond described below;

- one (1) forebay with approximate bottom dimensions of 11.0 m wide and 34.8 m long and depth of 1.0 m, equipped with 600 mm diameter corrugated HDPE inlet pipe, a rip-rap covered inlet structure, and a forebay berm with top elevation of 95.0 m masl, discharging to a wet extended detention pond described below;

- one (1) wet extended detention stormwater management pond located at the south east part of the site, with approximate bottom dimensions of 21.0 m wide and 71.4 m long and a maximum depth of 2.7 m at 96.70 m masl elevation, having side slopes of 3H:1V and 5H:1V near the outlet structure, providing a permanent pool storage capacity of 1,008 m^3 at elevation 95.0 m masl, an active storage capacity of 3,099 m^3 at 96.70 m masl elevation, and total storage capacity of 4,107 m^3, equipped with an outlet structure consisting of a 150 mm diameter reverse slope inlet pipe with a gate valve and a 450 mm diameter perforated pipe riser fitted with 75 mm diameter orifice plate, a 75 mm diameter maintenance discharge pipe with a gate valve, and an emergency overflow structure at elevation 97.0 m masl, discharging through a 450 mm diameter outlet pipe to existing swale along the northern side of the CN Rail line to Tooley Creek and eventually to Lake Ontario;

West Stormwater Management Pond (West SWM Pond)

A stormwater management facility to service a 4.3 ha drainage area comprising of the western part of the Durham York Energy Centre consisting of the following:

- one (1) approximately 296 m long drainage ditch collecting stormwater runoff from the north western part of the site, having an average horizontal slope of 1.0%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;

- approximately five (5) catch basins/maintenance holes and a total of 272.2 m long 450 mm diameter corrugated PE stormwater sewers conveying stormwater runoff collected from the western part of the site, discharging to a forebay of a wet extended detention stormwater management pond described below;

- one (1) forebay with approximate bottom dimensions of 13.0 m wide and 26.0 m long and depth of 1.0 m, equipped with 450 mm diameter corrugated HDPE inlet pipe, a rip-rap covered inlet structure, and a forebay berm with top elevation of 95.0 m masl, discharging to a wet extended detention pond described below;

- one (1) wet extended detention stormwater management pond located at the south western part of the site, with approximate bottom dimensions of 13.0 m wide and 58.0 m long and a maximum depth of 2.5 m at 96.5 m masl elevation, having side slopes of 3H:1V and 5H:1V near the outlet structure, providing a permanent storage capacity of 623 m^3 at elevation 95.0 m masl, an active storage capacity of 2,054 m^3 at 96.50 m masl elevation, and total storage capacity of 2,677 m^3, equipped with an outlet structure consisting of a 150 mm diameter reverse slope inlet pipe with a gate valve and a 450 mm diameter perforated pipe riser fitted with 75 mm diameter orifice plate, a 75 mm diameter maintenance discharge pipe with a gate valve, and an emergency overflow structure at elevation 96.80 m masl, discharging through a 450 mm diameter outlet pipe to existing swale along the northern side of the CN Rail line to Tooley Creek and eventually to Lake Ontario;

including all associated controls and appurtenances.

The reasons for the imposition of these terms and conditions are as follows:

GENERAL

Conditions 1.(1), (2), (5), (6), (7), (8), (9), (10), (11), (12), (13), (17), (18) and (19) are included to clarify the legal rights and responsibilities of the Owner.

Conditions Nos.1.(3) and (4) are included to ensure that the Site is operated in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider.

Condition No. 1.(14) is included to ensure that the Site is operated under the corporate name which appears on the application form submitted for this approval and to ensure that the Director is informed of any changes.

Condition No.1.(15) is included to restrict potential transfer or encumbrance of the Site without the notification to the Director and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this Certificate.

Condition No. 1.(16) is included to ensure that the appropriate Ministry staff has ready access to the operations of the Site which are approved under this Certificate. The Condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the *EPA*, the *OWRA*, the *PA*, the *NMA* and the *SDWA*.

SERVICE AREA, APPROVED WASTE TYPES, RATES and STORAGE

Condition No. 2. is included to specify the approved waste receipt rates, the approved waste types and the service area from which waste may be accepted at the Site based on the Owner's application and supporting documentation. Condition No. 2. is also included to specify the maximum amount of waste that is approved to be stored at the Site.

SIGNS and SITE SECURITY

Condition No. 3. is included to ensure that the Site's users, operators and the public are fully aware of important information and restrictions related to the operation of the Site. Condition No. 3. is also included to ensure that the Site is sufficiently secured, supervised and operated by properly trained personnel and to ensure controlled access and integrity of the Site by preventing unauthorized access when the Site is closed and no site personnel is on duty.

SITE OPERATIONS

Condition No. 4. is included to outline the operational requirements for the Facility to ensure that the said operation does not result in an adverse effect or a hazard to the natural environment or any person.

EQUIPMENT and SITE INSPECTIONS and MAINTENANCE

Condition No. 5. is included to require the Site to be maintained and inspected thoroughly on a regular basis to ensure that the operations at the Site are undertaken in a manner which does not result in an adverse effect or a hazard to the health and safety of the environment or any person.

PERFORMANCE REQUIREMENTS

Condition No. 6 is included to set out the minimum performance requirements considered necessary to prevent an adverse effect resulting from the operation of the Facility.

TESTING, MONITORING and AUDITING

Condition No. 7. is to require the Owner to gather accurate information on the operation of the Facility so that the environmental impact and subsequent compliance with the *EPA*, the *OWRA*, their Regulations and this Certificate can be verified.

NUISANCE IMPACT CONTROL and HOUSEKEEPING

Condition No. 8. is included to ensure that the Site is operated and maintained in an environmentally acceptable manner which does not result in a negative impact on the natural environment or any person. Condition No. 8 is also included to specify odour control measures to minimize a potential for odour emissions from the Site.

STAFF TRAINING

Condition No. 9. is included to ensure that staff are properly trained in the operation of the equipment and instrumentation used at the Site, in the emergency response procedures and on the requirements and restrictions related to the Site operations under this Certificate.

COMPLAINTS RECORDING PROCEDURE

Condition No.10. is included to require the Owner to respond to any environmental complaints resulting from the Facility appropriately and in a timely manner and that appropriate actions are taken to prevent any further incidents that may cause complaints in the future.

CONTINGENCY and EMERGENCY RESPONSE PLAN and EMERGENCY SITUATIONS RESPONSE AND REPORTING

Conditions Nos.11. and 12. are included to ensure that the Owner is prepared and properly equipped to take immediate action in the event of an emergency situation.

SUBMISSIONS to the REGIONAL DIRECTOR or DISTRICT MANAGER

Condition No. 13. is included to set out the requirements for the submissions to the District Manager and the Regional Director regarding the operation of the Facility and the activities required by this Certificate.

RECORDS KEEPING

Condition No.14. is included to ensure that detailed records of Site activities, inspections, monitoring and upsets are recorded and maintained for inspection and information purposes.

REPORTING

Condition No.15. is to ensure that regular review of site, operations and monitoring is carried out and findings documented by a third party for determining whether or not the Site is being operated in compliance with this Certificate of Approval, the EPA and its regulations and whether or not any changes should be considered.

PUBLIC ACCESS to DOCUMENTATION

Condition No.16. is included to ensure that the public has access to information on the operation of the Site in order to participate in the activities of the Advisory Committee in a meaningful and effective way.

ADVISORY COMMITTEE

Condition No.17. is included to require the Owner to establish a forum for the exchange of information and public dialogue on activities carried out at the Site and to ensure that the local residents are properly informed of the activities at the Site and that their concerns can be heard and acted upon , as necessary. Open communication with the public and local authorities is important in helping to maintain high standards for the operation of the Site and protection of the natural environment. Condition 16. is also included to ensure that the requirements of the EA Approval are fulfilled.

CLOSURE of the SITE

Condition No.18. is included to ensure that the final closure of the Site is completed in accordance with Ministry's standards.

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, and in accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended, you may by written Notice served upon me, the Environmental Review Tribunal, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner will place notice of your appeal on the Environmental Registry. Section 142 of the Environmental Protection Act and Section 101 of the

Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto, Ontario
M5G 1E5

AND

The Director
Section 9 and 39, *Environmental Protection Act*
Section 53, *Ontario Water Resources Act*
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted site is approved under Section 9 and Section 27 of the Environmental Protection Act and Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 28th day of June, 2011

Signature
Ian Parrott, P .Eng.
Director
Section 9, *EPA*
Section 39, *EPA*
Section 53, *OWRA*

MW,QN,SH/

c: District Manager, MOE York-Durham
Regional Director, MOE Central Region

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Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 1
Issue Date: August 12, 2014

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3

and

The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
72 Osbourne Rd Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, , as follows:

1. The following definition has been added:

"Contingency and Emergency Response Plan" also means the document entitled "Spill Contingency and Emergency Response Plan";

2. The following Conditions are amended to read as follows:

2.(5)(b)(iii) The Owner may use equipment used to handle the hazardous wastes to handle other wastes provided that prior to such use the equipment has been thoroughly cleaned first.

4.(5)(e) A maximum of 630 tonnes of the Residual Waste, limited to the bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is as follows:

(i) The storage duration is limited to a maximum of seven (7) days.

(ii) Should longer storage duration be required to accommodate the duration of the required compliance testing, a minimum of forty eight (48) hours before the storage extension is commenced, the Owner shall notify the District Manager of the required extension. The notification shall include the duration of the extension and the reasons.

3. The following Conditions are added:

7.(7) (e) The Owner shall carry out the required bottom and fly ash compliance testing in accordance with the document entitled "Ash Sampling and Testing Protocol", listed in the attached Schedule.

11.8 Containment evaluations performed under the Spill Contingency and Emergency Response Plan shall be conducted by the Owner in accordance to procedures agreed by the District Manager pursuant to Conditions 8.(7)(i),(ii) and (iii).

4. The following documents have been added to Schedule "A":

4. October 31, 2013 letter from Mirka Januszkiewicz, the Regional Municipality of Durham to Ian Parrott, Ministry of the Environment and Climate Change, requesting approval of the Ash Sampling and Testing Protocol and the document entitled "Durham York Energy Centre, Ash Sampling and Testing Protocol", prepared by by Golder Associates and dated June 2014.

5. Document entitled "Durham York Energy Centre, Spill Contingency & Emergency Response Plan" prepared by Covanta Durham York Renewable Energy Limited Partnership and dated January 13, 2014, excluding section entitled "Containment Evaluation".

6. Document entitled "Durham York Energy Centre, Protocol for the Measurement of Combustion Temperature and the Development of Time and Temperature Correlations", prepared by Covanta Durham York Renewable Energy Limited Partnership and dated June 2014.

7. Document entitled "Durham York Energy Centre, Noise Monitoring and Reporting Plan", prepared by Golder Associates and dated September 2011.

The reasons for this amendment to the Approval are as follows:

to approve the "Ash Sampling and Testing Protocol" as required Condition 7.(7)(a), the "Durham York Energy Centre, Spill Contingency & Emergency Response Plan", as required Condition 11.(3), "Durham York Energy Centre, Noise Monitoring and Reporting Plan" as required Condition 7.(5)(a) and "Durham York Energy Centre, Protocol for the Measurement of Combustion Temperature and the Development of Time and Temperature Correlations" as proposed by the applicant.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served

upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of the Environmental Protection Act
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal 's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 12th day of August, 2014

Ian Parrott, P.Eng.
Director
appointed for the purposes of Part II.1 of
the *Environmental Protection Act*

MW/
c: District Manager, MOE York-Durham
n/a, The Regional Municipality of Durham

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Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 2
Issue Date: October 24, 2014

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3

and
The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership
445 South St
Morristown, New Jersey
USA 07960

Site Location: Durham York Energy Centre
1835 Energy Drive
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment , as follows:

1. The address of the Site has been changed to read as follows:

Durham York Energy Centre
1835 Energy Drive
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

2. The following definitions have been added:

" **Operator** " means any person other than the Regions' employees, authorized by the Regions as having the charge, management or control of any aspect of the Site and includes TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership, the partnership under the laws of Nova Scotia more particularly described in the October 6, 2014 letter from Joanna Rosengarten to the Ministry of Environment and Climate Change, and includes its successors and assignees, their successors and assignees;

" **Regions** " means any person that is responsible for the establishment or operation of the Site being approved by this Approval, and it includes The Regional Municipality of Durham and The Regional Municipality of York, their successors and assignees;

2. The following definition has been amended to read as follows:

" **Site** " means the property referred to as Durham York Energy Centre where the Owner has located and operates the Facility and the Works and located at 1835 Energy Drive in the Municipality of Clarington, Regional Municipality of Durham;

" **Owner** " within the context of this Approval, means the Regions and the Operator;

3. The following Conditions have been amended to read as follows:

"General: Change of Ownership" Conditions 1.(14) and 1.(15):

(14) The Regions shall notify the Director in writing, and forward a copy of the notification to the District Manager, within thirty (30) days of the occurrence of any changes:

(a) the ownership of the Site;
(b) the operator of the Site;
(c) the address of the Regions;
(d) the partners, where the Regions are or at any time become a partnership and a copy of the most recent declaration filed under the *Business Names Act*, R.S.O. 1990, c. B.17, as amended, shall be included in the notification;
(e) the name of the corporation where the Regions are or at any time become a corporation, other than a municipal corporation, and a copy of the most current information filed under the *Corporations Information Act*, R.S.O. 1990, c. C.39, as amended, shall be included in the notification.

(15) No portion of this Site shall be transferred or encumbered prior to or after closing of the Site unless the Director is notified in advance. In the event of any change in ownership of the Site, other than change to a successor municipality, the Regions shall notify the successor of and provide the successor with a copy of this Approval, and the Regions shall provide a copy of the notification to the District Manager and the Director.

"Service Area, Approved Waste Types, Rates And Storage: Storage Restrictions" Condition 2.(5)(e):

2.(5)(e) (i) A maximum of 630 tonnes of the Residual Waste, limited to the bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation.

(ii) The storage duration of bottom ash in the bunkers is limited to a maximum of seven (7) days.

(iii) Should additional storage location(s) and a longer storage duration be required during testing, a minimum of forty eight (48) hours before the storage parameters are changed from those approved in Condition 2.(5)(e)(i) and (ii), the Owner shall notify the District Manager, in writing, of the proposed changes and provide the reasons for the changes.

"Site Operations: Residual Waste Handling and Disposal" Condition 4.(5)(b)(iii):

4.(5)(b)(iii) The Owner may use the equipment that comes in contact with the hazardous wastes to handle other wastes provided that prior to such use, the equipment has been cleaned, as confirmed by visual inspections, to ensure the removal of any hazardous waste residues and to prevent cross contamination.

"Closure of the Site" Conditions 18.(1) and 18.(2):

(1) A minimum of nine (9) months prior to closure of the Site, the Regions shall submit, for approval by the Director, a written Closure Plan for the Site. This Plan shall include, as a minimum, a description of the work that will be done to facilitate closure of the Site and a schedule for completion of that work.

(2) Within ten (10) days after closure of the Site, the Regions shall notify the Director and the District Manager, in writing, that the Site is closed and that the approved Closure Plan has been implemented.

4. "Covanta Durham York Renewable Energy Limited Partnership" is replaced with "TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership, the partnership under the laws of Nova Scotia more particularly described in the October 6, 2014 letter from Joanna Rosengarten to the Ministry of Environment and Climate Change and includes its successors and assignees", in the Environmental Compliance Approval dated June 28, 2011 and in the Notice of Amendment dated August 12, 2014.

5. The following documents are added to Schedule "A":

8. Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Matthew R. Mulcahy, Covanta Durham York Renewable Energy Limited Partnership, Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Cliff Curtis, The Regional Municipality of Durham and Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Laura McDowell, The Regional Municipality of York, including the following attached supporting documentation:

(a) revised Section 8.0 "Ash Handling and Associated System" and revised Section 10.0 "Potable Process and Wastewater" dated May 2014, of the document entitled "Design and Operations Report", dated March 2011, prepared by Golder Associates Ltd.

(b) Drawing No. M-2530, entitled "Piping & Instrumentation Diagram Bottom Ash Lime Slurry System"

(c) Drawing No. 70258-1-ME-GA-SK-001, entitled "Covanta Durham York Hydrated Lime System for Boiler Bottom Ash"

9. E-mail dated September 10, 2014 (2:26 p.m.) from Leon Brasowski, Covanta Durham York Renewable Energy Limited Partnership, to Margaret Wojcik, Ontario Ministry of the Environment and Climate Change, providing additional supporting documentation on the proposal, including an attachment entitled "M-1500^0360 Highlighted for MOE.pdf".

10. E-mail dated October 13, 2014 (3:23 p.m.) from Leon Brasowski, Covanta Durham York Renewable Energy Limited Partnership, to Ricki Allum, Ontario Ministry of the Environment and Climate Change, providing additional supporting documentation on the legal name of the applicant,

including an attachment entitled "Partnership Legal Clarification.pdf".

The reasons for this amendment to the Approval are as follows:

to approve the proposed Bottom Ash Lime Conditioning System, to correct the typographical errors in the Notice of Amendment dated August 12, 2014, to clarify the intent of the Residual Waste equipment cleaning condition and to allow different bottom ash storage conditions during testing.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of the Environmental Protection Act
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal 's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 24th day of October, 2014

Tesfaye Gebrezghi, P.Eng.
Director
appointed for the purposes of Part II.1 of
the *Environmental Protection Act*

MW/
c: District Manager, MOE York-Durham
Leon Brasowski, Covanta Energy Corporation

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Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 3
Issue Date: December 23, 2015

The Regional Municipality of Durham
605 Rossland Road Level 5
Whitby, Ontario
L1N 6A3

Site Location: Durham York Energy Centre
1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment , as follows:

The following Conditions are revoked:

7. TESTING, MONITORING and AUDITING

Noise Monitoring - Acoustic Audit

(5) The Owner:

(a) shall carry out Acoustic Audit measurements on the actual noise emissions due to the operation of the Facility. The Acoustic Audit measurements shall be carried out in accordance with the procedures in *Publication NPC-103* and in accordance to the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director;

(b) shall submit an Acoustic Audit Report on the results of the Acoustic Audit, prepared by an Independent Acoustical Consultant, in accordance with the requirements of *Publication NPC-233* and the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director, to the District Manager and the Director, not later than three (3) months after the commencement of operation of the Facility.

(6) The Director:

(a) may not accept the results of the Acoustic Audit if the requirements of *Publication NPC-233* or the approved noise Monitoring and Reporting Plan were not followed;

(b) may require the Owner to repeat the Acoustic Audit if the results of the Acoustic Audit are found unacceptable to the Director.

All other Terms and Conditions remain the same.

The reason for this amendment to the Approval is to address the information provided in the following documents:

Acoustic Audit Report prepared by Valcoustics Canada Ltd., dated May 8, 2015 and signed by Kathryn Katsiroumpas, P.Eng.; and

Acoustic Audit Report prepared by Valcoustics Canada Ltd., dated November 23, 2015 and signed by Kathryn Katsiroumpas, P.Eng.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary* Environmental Review Tribunal 655 Bay Street, Suite 1500 Toronto, Ontario	AND	The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment and

M5G 1E5

Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 23rd day of December, 2015

Ian Greason, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

HM/
c: District Manager, MOECC York-Durham
Kathryn Katsiroumpas, Valcoustics Canada Ltd.

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Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 4
Issue Date: February 24, 2016

The Regional Municipality of Durham
605 Rossland Road East, Level 5
Whitby, Ontario
L1N 6A3

The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

TransRiver Canada Incorporated operating as Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
USA 07960

Site Location: Durham York Energy Centre
1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for a Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, , as follows:

The following Conditions are revoked:

7. **TESTING , MONITORING** and **AUDITING**

Noise Monitoring - Acoustic Audit

(5) The Owner:

(a) shall carry out Acoustic Audit measurements on the actual noise emissions due to the operation of the Facility. The Acoustic Audit measurements shall be carried out in accordance with the procedures in *Publication NPC-103* and in accordance to the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director;

(b) shall submit an Acoustic Audit Report on the results of the Acoustic Audit, prepared by an Independent Acoustical Consultant, in accordance with the requirements of *Publication NPC-233*

and the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director, to the District Manager and the Director, not later than three (3) months after the commencement of operation of the Facility.

(6) The Director:

(a) may not accept the results of the Acoustic Audit if the requirements of *Publication NPC-233* or the approved Noise Monitoring and Reporting Plan were not followed;

(b) may require the Owner to repeat the Acoustic Audit if the results of the Acoustic Audit are found unacceptable to the Director.

All other Terms and Conditions remain the same.

The reason for this amendment to the Approval is to address the information provided in the following documents:

Acoustic Audit Report prepared by Valcoustics Canada Ltd., dated May 8, 2015 and signed by Kathryn Katsiroumpas, P.Eng.; and

Acoustic Audit Report prepared by Valcoustics Canada Ltd., dated November 23, 2015 and signed by Kathryn Katsiroumpas, P.Eng.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the
purposes of Part II.1 of the
Environmental Protection Act
Ministry of the Environment and
Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 24th day of February, 2016

Ian Greason, P.Eng.
Director
appointed for the purposes of Part II.1 of
the *Environmental Protection Act*

HM/
c: District Manager, MOECC York-Durham
Kathryn Katsiroumpas, Valcoustics Canada Ltd.

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Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 5
Issue Date: March 14, 2016

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3

and

The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership
445 South St
Morristown, New Jersey
USA 07960

Site Location: Durham York Energy Centre
1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment , as follows:

I. The following conditions have been amended to read as follows:

2 . SERVICE AREA, APPROVED WASTE TYPES, RATES and STORAGE

(5) Storage Restrictions:

Solids:

(c) A maximum of approximately 77 tonnes or 106 cubic metres of the Residual Waste, limited to the recovered ferrous metals, shall be stored in one (1) dedicated bunker, located within the confines of the Residue Building, described in the Supporting Documentation. (d) A maximum of approximately 120 tonnes or 100 cubic metres of the Residual Waste, limited to the recovered non-ferrous metals,

shall be stored in one (1) dedicated bunker, located within the confines of the Residue Building, described in the Supporting Documentation.

(e) A maximum of 630 tonnes of the Residual Waste, limited to bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation.

(f) A maximum of 700 tonnes of the Residual Waste, limited to the fly ash shall be stored in seven (7) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation.

(j) A maximum of 65 cubic metres of cement for fly ash conditioning shall be stored in one (1) outdoor silo, located adjacent to the Residue Building.

(k) A maximum of 105 cubic metres of pozzolan for fly ash conditioning shall be stored in one (1) outdoor silo, located adjacent to the Residue Building.

Liquids: (l) (i) A maximum of 57 cubic metres of aqueous ammonia for the SNCR System shall be stored in one (1) outdoor tank, located adjacent to the Residue Building.

(8) (a) Waste received at the Site shall be processed within six (6) days from its receipt at the Site.

(b) Emergency storage of Waste requirements:

(i) On an emergency basis only, the storage duration of Waste inside the tipping pit may be extended beyond the limit set out in Condition 2.(8)(a), above, subject to compliance with the following requirements:

(A) prior to the start of the emergency storage of Waste, the Owner shall notify, in writing, the District Manager that the incoming Waste will be stored longer than six (6) days from its receipt;

(B) any additional information that the District Manager may require shall be submitted within a time period acceptable to the District Manager;

(C) the proposed preventative measures for emergency storage of Waste as identified in the Operations and Maintenance Manual shall be implemented upon commencement of the emergency storage of Waste and shall remain in effect for the entire duration of the emergency storage, unless otherwise advised by the District Manager; and

(D) the Owner shall notify, in writing, the District Manager when emergency storage is no longer required.

5. EQUIPMENT and SITE INSPECTIONS and MAINTENANCE

(p) all measures deemed necessary to prevent an occurrence of an adverse effect from the emergency storage of Waste.

II. The following section of Schedule "F" has been amended to read as follows:

PARAMETER:
Total Hydrocarbons

INSTALLATION:
The Total Hydrocarbons Monitor shall be installed at an accessible location where the measurements are representative of the concentrations of Organic Matter (as methane) in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler or at any other location that has been determined in consultation with the Ministry to be suitable/equivalent for the determination of Total Hydrocarbons leaving the combustion zone of each Boiler and has been approved by the Director. The Total Hydrocarbons Monitor shall meet the following installation specifications:

PARAMETERS SPECIFICATION

1. Detector Type: Flame Ionization
2. Oven Temperature: 160 o C minimum
3. Flame Temperature: 1800 o C minimum at the corona of the hydrogen flame
4. Range (parts per million, ppm): 0 to ³ 200 ppm
5. Calibration Gas: propane in air or nitrogen
6. Calibration Gas Ports: close to the sample point

PERFORMANCE:
The Continuous Total Hydrocarbons Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS SPECIFICATION

1. Span Value (nearest ppm equivalent): 2 times the average normal concentration of the source
2. Relative Accuracy: £ 10 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3. System Bias: £ 4 percent of the mean value of the reference method test data
4. Noise: £ 1 percent of span value on most sensitive range
5. Repeatability: £ 1 percent of span value
6. Linearity (response with propane in air): £ 3 percent of span value over all ranges
7. Calibration Error: £ 2 percent of actual concentration
8. Procedure for Zero and Span Calibration Check: all system components checked on all ranges
9. Zero Calibration Drift (24-hours): £ 2.5 percent of span value on all ranges
10. Span Calibration Drift (24-hours): £ 2.5 percent of span value
11. Response Time (90 percent response £ 60 seconds to a step change):
12. Operational Test Period: ³ 168 hours without corrective

maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better. Measurements of concentrations of organic matter (as methane) shall be kept as 10 minute average values for record keeping and reporting purposes.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter .

III. The following Item #4 in Schedule "A" has been amended to read as follows:

4. Letter dated October 31, 2013 from Mirka Januszkiewicz, The Regional Municipality of Durham to Ian Parrott, Ministry of the Environment and Climate Change, requesting approval of the Ash Sampling and Testing Protocol and the document entitled "Durham York Energy Centre, Ash Sampling and Testing Protocol", excluding a reference to the Loss-on-Ignition test method on page 6, prepared by Golder Associates and dated June 2014.

IV. The following document has been added to Schedule "A":

5. Letter dated February 29, 2016 from Leon Brasowski, TransRiver Canada Incorporated, to Dale Gable, Ministry of the Environment and Climate Change, requesting change to the total hydrocarbon monitor location as reviewed and accepted by the Ministry`s Standards Development Branch.

The reasons for this amendment to the Approval are as follows:

1. to remove the storage duration limits on storage of recovered ferrous and non-ferrous metals since such storage does not pose an environmental risk;

2. to increase the amounts of cement, pozzolan and aqueous ammonia approved for storage at the Site since the currently approved amounts result in partial filling of the tanks, necessitating more frequent deliveries resulting in increased truck traffic and a chance of interrupting fly ash and flue gas treatment;

3. to revise the protocol for an emergency storage of the incoming Waste so that the Owner is able to deal more effectively with emergency situations occurring at the Site while providing more flexibility to the Districting Manager to oversee management of such situations;

4. to remove a reference to an incorrect bottom ash testing method erroneously included within the text of the DYEC Ash Sampling and Testing Protocol included as Item #4 in Schedule "A" in order to ensure that only the approved testing method for compliance testing is referenced in the supporting documentation.

5. to approve the revised location of the Total Hydrocarbons Monitor following the Ministry's acceptance of the results of the test program in which two (2) Total Hydrocarbons Monitor monitors were operated in the existing and the proposed locations simultaneously.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of the Environmental Protection Act
Ministry of the Environment and Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 14th day of March, 2016

Dale Gable, P.Eng.
Director
appointed for the purposes of Part II.1 of
the *Environmental Protection Act*

MW/
c: District Manager, MOECC York-Durham

n/a, TransRiver Canada Incorporated operating as Covanta Durham York Renewable Energy Limited Partnership

Content Copy Of Original

Ontario

Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 1
Issue Date: April 22, 2020

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3
and
The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1
and
Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment , as follows:

Notwithstanding the existing conditions of this Environmental Compliance Approval, the following provisions of this Emergency Approval are in effect for the time durations set out as follows:

1. Until December 31, 2020, the Owner may temporarily increase the amount of Waste to be received and thermally treated at the Site up-to 160,000 tonnes per year.

2. From the date of this Approval to the date that corresponds to up-to ninety (90) days after the Ontario Government ends the current Declaration of Emergency to Protect the Public Health, unless an extension has been issued in writing by the District Manager, the following Conditions Nos. 3 through 10 are in effect.

3. The Owner shall provide a written notification to the District Manager when any of the following Conditions Nos. 4 through 9 are implemented.

4. All conditions that set out limitations on hours/days for shipping and receiving of materials including the Waste, the reagents and the Residual Waste are temporarily rescinded.

5. The Owner may temporarily increase the maximum tonnage amounts for the bottom and fly ash within the Residue Building up-to 80% of the total achievable storage capacity of the Residue Building.

6. The Owner may temporarily store the Residual Waste and the reagents in the outdoor locations at the Site and the storage shall be done as follows:

a. the storage shall be in covered and leak-proof trailers or bins or containers;

b. trailers or bins or containers shall be parked or located away from catchbasins, if possible; and

c. if trailers or bins or containers must be parked or be located near catchbasins, covers or booms shall be readily available to protect catchbasins in the event of a spill or leak.

7. All conditions that set out limitations on receipt and storage of reagents are temporarily rescinded.

8. The Owner may temporarily reduce the number of loads tipped on the tipping floor for a manual visual inspection and sorting of the incoming Waste from one load per hour to two loads per shift, unless instructed otherwise by the local Medical Officer of Health to cease inspections on the tipping floor.

9. Following commencement of the outdoor storage of the Residual Waste or the reagents at the Site, the Owner shall conduct daily inspections of any outdoor storage location for evidence of spills, odour, vermin/vectors, dust, litter and other nuisance impacts, and shall maintain a written or electronic log of these inspections. The log shall be kept at the Site for the duration acceptable to the District Manager and it shall contain the following information:

a. the date of the inspection;

b. the location of the inspection;

c. the name of person undertaking the inspection;

d. any impacts identified during the inspection; and

e. any remedial actions taken to address those impacts.

10. By the end of the ninety (90) day-period from the date when the Ontario Government ends the current Declaration of Emergency to Protect the Public Health,

the Owner shall provide to the District Manager a summary report of the expected timelines for the storage and the operational practices to return to normal operating levels/protocols as approved in this Approval.

The reasons for this amendment to the Approval are as follows:

to provide temporary additional thermal treatment capacity at the Site and the operational flexibility as requested in the letter dated March 20, 2020 signed and submitted by Gioseph Anello, M.Eng., P.Eng., PMP, Acting Director, Waste Management Services, The Regional Municipality of Durham and Laura McDowell, P.Eng., Director, Environmental Promotion and Protection, The Regional Municipality of York to respond to the current Declaration of Emergency to Protect the Public Health and to alleviate impacts and prevent any danger to the health and safety of the public and the environment.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of the Environmental Protection Act
Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or** www.ert.gov.on.ca

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 22nd day of April, 2020

Mohsen Keyvani, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

MW/
c: District Manager, MECP York-Durham
Gioseph Anello, M.Eng., P.Eng., PMP, Acting Director, Waste Management Services, The Regional Municipality of Durham
Laura McDowell, P.Eng., Director, Environmental Promotion and Protection, The Regional Municipality of York

Content Copy Of Original

Ontario

Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 2
Issue Date: December 23, 2021

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3
and
The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1
and
Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment , as follows:

Notwithstanding the existing conditions of this Environmental Compliance Approval, the following provisions of this Emergency Approval are in effect for the time durations set out as follows:

1. Until December 31, 2021, the Owner may temporarily increase the amount of Waste to be received and thermally treated at the Site from 140,000 tonnes per year up-to 142,000 tonnes per year.

The reasons for this amendment to the Approval are as follows:

1. to provide temporary additional thermal treatment capacity at the Site as requested in the Environmental Compliance Approval Application dated November 23, 2021 signed and submitted by Gioseph Anello, M.Eng., P.Eng., PMP, Director Waste Management Services, the Regional Municipality of Durham (Durham Region) on behalf of York

Region, Durham Region and Covanta;

2. to effectively manage the increase in the quantities of waste being disposed of within the existing curbside programs and received at transfer stations within the approved service area due to work from home arrangements and behaviour change of residents resulting from the ongoing COVID-19 pandemic; and

3. to safely manage waste generated in the approved service area to prevent,

d. danger to the health or safety of any person;

e. impairment or immediate risk of impairment of the quality of the natural environment for any use that can be made of it; or

f. injury or damage or immediate risk of injury or damage to any property or to any plant or animal life environment and present potential hazard to the health and safety of neighbouring sites, wildlife and the public and prevent any danger to the health and safety of the public and the environment.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the *Environmental Protection Act,* you may by written notice served upon me and the Ontario Land Tribunal within 15 days after receipt of this notice, require a hearing by the Tribunal. Section 142 of the *Environmental Protection Act* provides that the notice requiring the hearing ("the Notice") shall state:

a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the *Environmental Protection Act,* a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;

5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

Registrar*
Ontario Land Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5
OLT.Registrar@ontario.ca

and

The Director appointed for the purposes of Part II.1 of the *Environmental Protection Act*
Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Ontario Land Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349 or 1 (866) 448-2248, or** www.oltt.gov.on.ca

The above noted activity is approved under s.20.3 of Part II.1 of the *Environmental Protection Act.*

DATED AT TORONTO this 23rd day of December, 2021

Mohsen Keyvani, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

MW/
c: District Manager, MECP York-Durham
Gioseph Anello, M.Eng., P.Eng., PMP, Director, Waste Management Services, The Regional Municipality of Durham
Laura McDowell, P.Eng., Director, Environmental Promotion and Protection, The Regional Municipality of York
Andrew Evans, The Regional Municipality of Durham

APPENDIX 4

Particulate and Metals Field Data Sheets
(30 pages)

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	Particulate/Metals
Test Date	Nov. 29/21
Test Location	APC Outlet No. 1
Operator	RV

Project No.:	22085
Page	1 of 5
Probe No.:	
Meter Box No.:	Team 4
Impinger Box No.:	

Pitot Factor	0.848	
DGMCF	1.026	
Barometric Pressure	29.73	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	.2533	inches
Stack Diameter	4.5	feet
Length	~	feet
Width	~	feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter	0.9	mg
Probe	0.5	mg

Moisture Gain

CWTR	407.3	g
WCBDA	253	g

Combustion Gas Concentration

Oxygen	8.80	%
Carbon Dioxide	10.70	%
Carbon Monoxide	7.0	ppm

Measuring Device	MII Numbers
Probe / Pitot	STA C0E20112
Trendicator	
Control Box	Team 4 C0E 20090
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	B03936
Barometer	Env. Can
Calipers	CAN22136

Nozzle Measurements	
1	.2530
2	.2530
3	.2535
4	.2535
Average:	.25325

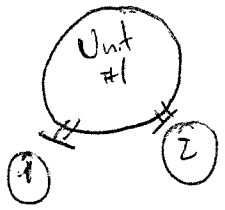
Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram



Notes:

Field Data Sheet

Date: Nov. 29	Plant: Covanta DYEC	Test No.: #1 Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	57.97	.62	.66	286	257	251	56	82	82	82	1.7	-5
	2.5	59.85	.85	.78	284	255	251	54	175	82	86	2.2	6
	5	61.94	.85	.78	284	255	260	50	180	82	87	2.2	6
2	7.5	64.05	.85	.78	284	256	248	49	186	82	88	2.2	6
	10	66.11	.86	.78	284	256	252	49	191	82	89	2.1	6
	12.5	68.13	.86	.78	284	256	251	50	194	83	90	2	6
3	15	70.10	.86	.76	284	257	252	50	196	83	91	1.9	6
	17.5	71.99	.79	.75	284	257	260	51	198	83	92	1.9	6
	20	73.99	.79	.75	284	257	260	51	198	83	92	1.9	6
4	22.5	75.98	.75	.74	284	257	259	52	202	84	93	1.7	6
	25	77.72	.75	.74	284	257	260	52	202	84	94	1.7	6
	27.5	79.44	.74	.73	284	257	255	51	202	85	94	1.7	6
5	30	81.26	.67	.70	284	257	260	51	201	85	95	1.5	5.5
	32.5	82.88	.66	.69	284	257	259	50	201	85	95	1.5	5.5
	35	84.45	.66	.69	283	257	259	51	200	86	96	1.5	5.5
6	37.5	86.16	.60	.66	283	257	251	51	215	86	96	1.4	5.5
	40	87.81	.59	.66	283	257	260	51	207	86	96	1.4	5.5
	42.5	89.46	.59	.66	283	257	260	51	213	87	96	1.4	5.5
7	45	91.12	.66	.69	283	257	257	50	215	87	97	1.5	5.5
	47.5	92.88	.65	.69	283	257	260	50	216	87	97	1.5	5.5
	50	94.64	.65	.69	283	257	257	50	217	87	97	1.5	5.5

Traverse:					
Start Time:	10:30	Initial Leak Check:	.006	cfm@ 16	"Hg
Finish Time:	12:00	Final Leak Check:	.014	cfm@ 21	"Hg

Project No.: 22085

Operator : RV

Field Data Sheet

Date: Nov. 29	Plant: Covanta DYEC	Test No.: #1 Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	96.41	.70	.72	283	257	257	50	217	87	97	1.6	5.5
	55	98.20	.70	.72	283	257	254	50	218	88	97	1.6	5.5
	57.5	100.00	.68	.68	283	257	259	50	218	88	97	1.6	5.5
9	60	101.80	.68	.71	283	257	252	50	218	88	97	1.6	5.5
	62.5	103.60	.68	.71	282	257	254	50	218	88	97	1.6	5.5
	65	105.40	.68	.71	282	257	255	50	218	88	97	1.6	5.5
10	67.5	107.18	.68	.71	282	257	252	49	218	88	98	1.6	5.5
	70	108.98	.68	.71	282	257	254	49	218	87	98	1.6	5.5
	72.5	110.77	.68	.71	282	256	253	50	218	89	98	1.6	5.5
11	75	112.57	.68	.71	282	256	261	50	218	89	98	1.6	5.5
	77.5	114.37	.68	.71	282	256	261	50	218	89	98	1.6	5.5
	80	116.17	.68	.71	282	257	262	50	218	89	98	1.6	5.5
12	82.5	117.98	.40	.54	282	257	262	50	218	89	98	1.0	5
	85	119.42	.40	.54	282	257	262	50	218	89	98	1.0	5
	87.5	120.80	.41	.55	282	256	260	51	214	89	98	1.0	5
	90	122.18											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22085

Operator :

Field Data Sheet

Date: Nov. 29	Plant: Covanta DYEC	Test No.: (1) Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. #1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	122.74	0.85	0.79	282	257	258	53	176	88	93	~~1.8~~ 2.1	6
	2.5	124.76	0.85	0.79	285	255	249	47	201	88	94	2.1	6
	5	126.80	0.85	0.79	285	255	255	45	201	88	94	2.1	6
2	7.5	128.83	0.85	0.79	286	256	257	44	207	88	95	2.1	6
	10	130.87	0.85	0.79	286	256	257	44	207	88	95	2.1	6
	12.5	132.88	0.85	0.79	286	257	255	44	208	88	96	2.1	6
3	15	134.90	0.85	0.79	285	257	260	44	209	89	96	2.1	6
	17.5	136.92	0.85	0.79	285	257	251	44	209	89	97	2.1	6
	20	138.92	0.82	0.77	286	257	256	44	209	89	97	2	6
4	22.5	140.92	0.80	0.76	286	257	252	44	209	89	97	2	6
	25	142.93	0.75	0.74	286	257	252	42	211	89	97	1.8	6
	27.5	144.84	0.75	0.74	285	257	251	44	219	89	98	1.8	6
5	30	146.73	0.72	0.72	286	257	249	45	221	89	98	1.7	6
	32.5	148.62	0.72	0.72	286	257	254	45	220	89	98	1.7	6
	35	150.37	0.72	0.72	286	257	257	45	221	90	98	1.7	6
6	37.5	152.20	0.75	0.69	286	257	257	45	221	90	98	1.8	6
	40	153.97	0.66	0.69	286	258	257	45	221	90	98	1.6	6
	42.5	155.74	0.66	0.69	286	257	257	45	220	90	98	1.6	6
7	45	157.51	0.75	0.74	287	257	257	45	220	90	98	2.0	6
	47.5	159.60	0.75	0.74	287	257	257	45	220	90	98	1.9	6
	50	161.47	0.75	0.74	287	257	257	45	220	90	98	1.9	6

Traverse: 2					
Start Time: 12:12	Initial Leak Check:	.006	cfm@	15	"Hg
Finish Time: 13:42	Final Leak Check:	.010	cfm@	16	"Hg

Project No.: 22085

Operator : RV

Field Data Sheet

Date: Nov. 29	Plant: Covanta DYEC	Test No.: (1) Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. (1)	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	163.42	0.75	0.74	287	257	262	46	223	90	98	1.9	6
	55	165.37	0.75	0.74	287	257	262	46	224	90	98	1.9	6
	57.5	167.33	0.75	0.74	287	257	262	46	223	90	98	1.9	6
9	60	169.28	0.78	0.75	287	257	262	46	223	90	98	1.9	6
	62.5	171.23	0.79	0.76	287	257	258	46	223	90	98	1.9	6
	65	173.18	0.78	0.75	287	257	252	46	222	90	98	1.9	6
10	67.5	175.15	0.78	0.75	287	257	254	46	222	90	98	1.9	6
	70	177.08	0.78	0.75	287	257	249	46	222	90	98	1.9	6
	72.5	179.03	0.78	0.75	287	257	249	46	222	90	98	1.9	6
11	75	180.98	0.72	0.72	287	257	260	47	222	90	98	1.8	6
	77.5	182.87	0.72	0.72	287	257	260	47	222	90	98	1.7	6
	80	184.72	0.72	0.72	287	257	260	47	222	90	98	1.7	6
12	82.5	186.66	0.65	0.69	287	256	251	47	220	90	98	1.5	6
	85	188.41	0.67	0.70	287	256	254	48	220	90	98	1.5	6
	87.5	190.10	0.65	0.69	287	256	254	47	218	90	98	1.5	6
	90	191.86											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22085

Operator : R

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	2 Particulate/Metals
Test Date	Nov. 29/21
Test Location	APC Outlet No. 1
Operator	N

Project No.:	22085
Page	1 of 5
Probe No.:	
Meter Box No.:	Team 4
Impinger Box No.:	

Pitot Factor	0.848	
DGMCF	1.026	
Barometric Pressure	29.71	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	.2533	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter	0.2	mg
Probe	3.4	mg

Moisture Gain

CWTR	476.4	g
WCBDA	240	g

Combustion Gas Concentration

Oxygen	8.90	%
Carbon Dioxide	10.46	%
Carbon Monoxide	9.0	ppm

Measuring Device	MII Numbers
Probe / Pitot S7A	COG 20112
Trendicator	
Control Box	COG 20090
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	B03936
Barometer	Gar. Can.
Calipers	CAN22136

Nozzle Measurements	
1	.2530
2	.2530
3	.2535
4	.2535
Average:	.2533

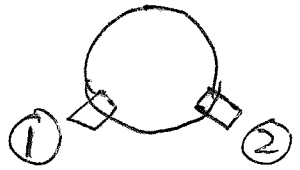
Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram



Notes:

Field Data Sheet

Date: Nov. 29/21	Plant: Covanta DYEC	Test No.: #2 Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	92.30	0.89	0.80	286	253	258	50	245	86	88	2.1	6
	2.5	94.33	0.89	0.80	287	254	250	50	208	87	91	2.1	6
	5	96.37	0.89	0.80	288	254	251	50	206	88	91	2.1	6
2	7.5	98.40	0.90	0.80	288	255	252	50	189	87	93	2.1	6
	10	100.42	0.90	0.80	288	256	259	50	203	87	94	2.1	6
	12.5	102.45	0.90	0.81	288	256	250	50	211	88	95	2.1	6
3	15	104.58	0.90	0.81	285	256	251	50	212	88	95	2.1	6
	17.5	106.50	0.90	0.81	288	257	251	49	213	88	96	2.1	6
	20	108.52	0.90	0.81	289	257	251	49	213	88	96	2.1	6
4	22.5	110.54	0.82	0.77	289	257	251	48	214	89	96	2.0	6
	25	112.52	0.85	0.78	288	257	260	48	214	89	97	2.0	6
	27.5	114.51	0.82	0.77	288	257	251	48	214	89	98	2.0	6
5	30	116.48	0.78	0.75	289	257	258	48	214	89	98	1.9	6
	32.5	118.41	0.80	0.76	289	257	257	48	214	89	98	1.9	6
	35	120.34	0.81	0.77	289	257	260	48	215	89	98	1.9	6
6	37.5	122.25	0.75	0.74	289	258	252	48	215	89	98	1.6	5.5
	40	124.06	0.75	0.74	290	257	260	49	213	90	99	1.6	5.5
	42.5	125.88	0.72	0.72	290	257	252	49	213	90	99	1.6	5.5
7	45	127.72	0.78	0.75	289	257	260	49	213	90	99	1.7	5.5
	47.5	129.59	0.78	0.75	290	257	252	50	214	90	99	1.7	5.5
	50	131.47	0.78	0.75	290	259	254	50	214	90	99	1.7	5.5

Traverse:	2				
Start Time:	14:30	Initial Leak Check:	<.002	cfm@ 16	"Hg
Finish Time:	16:00	Final Leak Check:	.002	cfm@ 16	"Hg

Project No.: 22085

Operator : R

Field Data Sheet

Date: Nov. 29	Plant: Covanta DYEC	Test No.: (2) Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp		Meter Temp		Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
								Outlet °F	Inlet/Trap °F	Outlet °F	Inlet °F		
8	52.5	133.34	0.80	0.76	290	257	260	50	214	90	99	1.8	5.5
	55	135.28	0.81	0.77	289	257	259	50	214	90	99	1.8	5.5
	57.5	137.21	0.81	0.77	289	257	254	50	214	90	99	1.8	5.5
9	60	139.14	0.85	0.79	290	257	257	50	215	90	99	1.9	6
	62.5	141.13	0.85	0.79	290	257	251	50	214	91	99	1.9	6
	65	143.11	0.84	0.78	290	257	256	51	214	91	99	1.9	6
10	67.5	145.10	0.84	0.78	291	257	256	51	213	91	99	1.9	6
	70	147.08	0.82	0.77	290	257	258	51	213	91	100	1.9	6
	72.5	149.05	0.80	0.76	289	257	253	51	213	91	100	1.8	6
11	75	151.05	0.75	0.74	289	257	255	51	213	91	100	1.8	6
	77.5	152.97	0.75	0.74	289	257	258	51	213	91	100	1.8	6
	80	154.87	0.75	0.74	289	257	255	52	221	91	100	1.8	6
12	82.5	156.77	0.75	0.74	289	257	256	52	225	91	100	1.8	6
	85	158.68	0.73	0.73	289	256	256	53	246	91	100	1.8	6
	87.5	160.59	0.72	0.72	289	256	256	53	244	91	100	1.8	6
	90	162.53											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22085

Operator : JV

Field Data Sheet

Date: Nov. 29	Plant: Covanta DYEC	Test No.: #2 Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	163.46	0.92	0.81	289	257	250	71	175	89	92	2.1	6
	2.5	165.52	0.93	0.82	289	256	259	68	242	90	95	2.1	6
	5	167.58	0.93	0.82	289	256	251	69	244	90	96	2.1	6
2	7.5	169.62	0.92	0.82	290	256	254	69	244	90	96	2.1	6
	10	171.67	0.93	0.82	290	257	252	69	248	90	97	2.1	6
	12.5	173.72	0.93	0.82	291	257	251	69	248	90	97	2.1	6
3	15	175.77	0.92	0.82	290	257	253	69	249	90	98	2.1	6
	17.5	177.80	0.85	0.79	290	257	261	69	250	90	98	~~2.1~~ 1.8	6
	20	179.72	0.84	0.78	291	257	260	69	250	90	98	1.8	6
4	22.5	181.62	0.71	0.72	290	257	260	69	250	90	98	1.6	6
	25	183.41	0.71	0.72	290	257	254	69	249	90	99	1.6	6
	27.5	185.19	0.72	0.72	291	257	256	69	249	90	99	1.6	6
5	30	187.00	0.60	0.66	290	257	254	70	249	91	100	1.5	5.5
	32.5	188.74	0.61	0.67	290	257	254	70	249	91	100	1.5	5.5
	35	190.45	0.63	0.68	291	257	256	69	250	91	100	1.5	5.5
6	37.5	192.17	0.62	0.67	291	257	259	69	248	91	100	1.5	5.5
	40	193.88	0.62	0.67	291	257	256	69	250	91	100	1.5	5.5
	42.5	195.52	0.62	0.67	291	257	258	69	250	91	100	1.5	5.5
7	45	197.30	0.72	0.72	291	257	258	69	250	91	100	1.6	6
	47.5	199.03	0.75	0.74	291	257	257	69	250	91	100	1.6	6
	50	200.85	0.75	0.74	292	257	258	69	250	91	100	1.6	6

Traverse:	1					
Start Time:	16:10	Initial Leak Check:	.002	cfm@	16	"Hg
Finish Time:	17:40	Final Leak Check:	.002	cfm@	16	"Hg

Project No.: 22085

Operator : RV

Field Data Sheet

Date: Nov. 29	Plant: Covanta DYEC	Test No.: #2 Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	202.70	0.75	0.74	292	257	258	69	250	91	101	1.6	6
	55	204.45	0.78	0.75	292	257	260	70	251	91	100	1.7	6
	57.5	206.46	0.78	0.75	292	257	251	69	249	91	100	1.7	6
9	60	208.34	0.78	0.75	292	257	261	69	250	91	100	1.7	6
	62.5	210.21	0.76	0.75	292	257	251	70	249	92	100	1.7	6
	65	212.07	0.77	0.75	292	257	261	70	250	92	100	1.7	6
10	67.5	213.95	0.73	0.73	291	257	252	70	249	92	100	1.7	6
	70	215.81	0.70	0.71	291	257	260	70	249	92	100	1.7	6
	72.5	217.67	0.71	0.72	289	257	251	70	248	92	100	1.7	6
11	75	219.57	0.62	0.67	289	257	261	70	249	92	100	1.5	6
	77.5	221.28	0.55	0.63	289	257	257	70	249	92	100	1.4	6
	80	222.94	0.55	0.63	289	257	261	71	247	92	100	1.4	6
12	82.5	224.62	0.58	0.65	289	257	252	71	247	92	100	1.4	6
	85	226.28	0.58	0.65	289	257	260	71	247	92	100	1.4	6
	87.5	227.93	0.58	0.65	289	256	255	71	246	92	101	1.4	6
	90	229.60											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22085

Operator : N

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	Particulate/Metals #3
Test Date	Nov. 30/21
Test Location	APC Outlet No. 1
Operator	N

Project No.:	22085
Page	1 of 5
Probe No.:	
Meter Box No.:	Team 4
Impinger Box No.:	

Pitot Factor	0.844	
DGMCF	1.026	
Barometric Pressure	29.58	"Hg
Static Pressure	~~-10.8~~ -11.6	"H2O
Nozzle Size	.2556	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter	<0.1	mg
Probe	1.7	mg

Moisture Gain

CWTR	495.1	g
WCBDA	23.7	g

Combustion Gas Concentration

Oxygen	9.10	%
Carbon Dioxide	10.41	%
Carbon Monoxide	14.8	ppm

Measuring Device	MII Numbers
Probe / Pitot	ISE COE 20113
Trendicator	
Control Box	COE 20090
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	D03936
Barometer	Env. Can.
Calipers	CAN 22106

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements	
1	.2550
2	.2560
3	.2555
4	.2560
Average:	.2556

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: Nov. 30/21	Plant: Covanta DYEC	Test No.: Particulate/Metals #3	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	79.41	.46	.58	289	265	214	81	101	89	90	1.1	5
	2.5	80.94	.96	.84	286	258	255	63	192	89	94	2.3	7
	5	82.91	.95	.84	287	257	256	61	198	89	95	2.3	7
2	7.5	85.04	.98	.85	288	266	253	59	150	90	95	2.4	7
	10	87.27	.95	.84	288	263	258	56	201	90	96	2.3	7
	12.5	89.45	.95	.84	288	262	250	54	208	90	97	2.3	7
3	15	91.64	.92	.83	288	267	260	52	211	90	97	2.2	7
	17.5	93.77	.89	.82	288	265	253	51	212	91	98	2.1	6.5
	20	95.80	.90	.82	288	265	253	50	213	91	98	2.1	6.5
4	22.5	97.87	.85	.80	288	265	249	50	214	91	98	2.0	6.5
	25	99.86	.85	.80	288	266	252	48	212	91	99	2.0	6.5
	27.5	101.90	.86	.80	289	266	252	47	212	91	99	2.0	6.5
5	30	103.90	.82	.78	289	266	252	47	212	91	99	1.9	6.5
	32.5	105.89	.81	.78	289	268	254	48	211	92	100	1.9	6.5
	35	107.88	.81	.78	289	267	255	48	211	92	100	1.9	6.5
6	37.5	109.86	.74	.74	289	267	255	48	211	92	100	1.8	6
	40	111.76	.73	.74	289	267	255	48	211	92	100	1.8	6
	42.5	113.69	.73	.74	289	267	255	48	211	92	100	1.8	6
7	45	115.59	.81	.78	289	269	255	48	211	92	101	1.9	6.5
	47.5	117.56	.81	.78	290	269	255	48	211	92	101	1.9	6.5
	50	119.56	.81	.78	290	269	255	48	211	92	101	1.9	6.5

Traverse: 2					
Start Time: 16:35	Initial Leak Check:	.002	cfm@ 17	"Hg	
Finish Time: 18:05	Final Leak Check:	.003	cfm@ 17	"Hg	

Project No.: 22085

Operator : RV

Field Data Sheet

Date: NOV. 30/21	Plant: Covanta DYEC	Test No.: #3 Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/~~Trap~~ °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	121.50	.83	.79	290	268	254	48	219	92	101	1.95	6-5
	55	123.51	.83	.79	290	268	254	48	219	92	101	1.95	6-5
	57.5	125.52	.83	.79	290	268	254	48	217	92	101	1.9	6.5
9	60	127.47	.86	.80	290	268	254	49	219	93	101	2.0	6.5
	62.5	129.54	.85	.80	289	268	254	49	219	93	101	2.0	6.5
	65	131.50	.84	.79	289	268	254	49	219	93	101	~~2.0~~ 1.9	6.5
10	67.5	133.48	.86	.80	289	268	252	50	219	93	101	1.9	6.5
	70	135.47	.86	.80	289	268	252	50	219	93	101	1.9	6.5
	72.5	137.44	.86	.80	289	268	252	49	219	93	101	1.9	6.5
11	75	139.41	.79	.77	~~288~~ 289	268	251	48	219	93	101	1.8	6
	77.5	141.34	.78	.77	289	268	251	48	219	93	101	1.8	6
	80	143.20	.78	.77	289	268	251	48	219	93	101	1.8	6
12	82.5	145.11	.76	.76	~~288~~ 289	268	251	47	219	93	101	1.8	6
	85	146.98	.76	.76	~~288~~ 289	268	251	47	219	93	101	1.8	6
	87.5	148.87	.76	.76	~~288~~ 289	268	251	47	219	93	101	1.8	6
	90	150.92											

Traverse: 2			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22085

Operator : RV

Field Data Sheet

Date: Nov. 30/21	Plant: Covanta DYEC	Test No.: Particulate/Metals #3	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp		Meter Temp		Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
								Outlet °F	Inlet/Trap °F	Outlet °F	Inlet °F		
1	0	151.30	0.96	0.85	288	264	243	50	220	93	98	1.8	6
	2.5	153.25	0.98	0.86	298	263	258	50	230	92	98	2.1	6
	5	155.18	1.1	0.90	290	266	295	49	234	93	99	2.1	6
2	7.5	157.21	1.1	0.91	291	265	257	50	237	92	99	2.5	6
	10	159.43	1.1	0.90	291	263	253	50	238	93	100	2.5	6
	12.5	161.69	1.1	0.91	291	268	259	51	238	93	100	2.5	7
3	15	163.97	1.1	0.91	291	263	253	52	238	93	100	2.5	7
	17.5	166.24	1.1	0.91	291	265	254	55	207	94	100	2.5	7
	20	168.51	1.1	0.91	291	269	256	49	211	94	100	2.5	7
4	22.5	170.77	0.96	0.85	292	263	259	48	211	93	100	2.5	7
	25	172.85	0.95	0.84	292	266	253	48	211	93	101	2.7	7
	27.5	175.4	0.96	0.85	292	269	252	48	216	93	100	2.1	7
5	30	177.56	0.96	0.85	293	264	258	47	238	93	100	2.1	7
	32.5	179.67	0.89	0.81	293	269	254	48	238	93	101	2.1	7
	35	181.75	0.85	0.80	293	269	254	48	238	93	101	2.1	7
6	37.5	183.89	0.73	0.74	292	268	255	48	238	93	101	1.8	7
	40	185.67	0.69	0.72	293	267	255	48	236	93	101	1.8	7
	42.5	187.56	0.71	0.73	294	266	256	51	236	93	101	1.8	7
7	45	189.45	0.70	0.72	294	267	255	48	236	93	102	1.7	7
	47.5	191.30	0.78	0.76	291	267	255	48	236	93	102	1.7	7
	50	193.16	0.80	0.77	292	271	257	48	236	93	102	1.8	7

Traverse: 1				
Start Time: 18:43	Initial Leak Check: < 0.005	cfm@ 15	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22085

Operator : RV / BM

Field Data Sheet

Date:	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	195.04	0.82	0.78	292	266	252	48	236	93	102	1.8	7
	55	196.94	0.86	0.80	293	268	256	49	237	93	102	1.9	7
	57.5	198.88	0.85	0.80	293	262	254	48	235	93	102	2.0	7
9	60	200.87	0.87	0.81	293	264	255	48	235	93	102	2.0	7
	62.5	202.87	0.87	0.81	294	264	251	49	235	93	102	2.0	7
	65	204.88	0.86	0.80	294	268	258	49	234	93	102	2.0	7
10	67.5	206.88	0.85	0.80	294	262	245	49	233	94	102	2.0	7
	70	208.89	0.84	0.79	284	266	251	49	232	93	102	2.0	7
	72.5	210.89	0.82	0.79	284	268	258	50	237	93	102	2.0	7
11	75	212.88	0.85	0.80	284	267	251	50	237	93	102	2.0	7
	77.5	214.85	0.75	0.75	~~178~~ 284	265	255	50	238	93	102	1.8	~~7~~
	80	216.77	0.75	0.75	284	268	256	51	238	93	102	1.8	7
12	82.5	218.68	0.75	0.75	284	265	252	51	232	93	102	1.8	7
	85	220.59	0.76	0.76	284	264	254	51	238	93	101	1.8	7
	87.5	222.49	0.74	0.75	284	264	254	51	238	93	101	1.8	7
	90	224.42											

Traverse: 2				
Start Time:	Initial Leak Check: <0.001	cfm@	16	"Hg
Finish Time: 19:43	Final Leak Check:	cfm@		"Hg

Project No.: 22085

Operator: BW

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	Particulate/Metals #1
Test Date	Nov. 10/21
Test Location	APC Outlet No. 2
Operator	RV

Project No.:	22085
Page	1 of 5
Probe No.:	
Meter Box No.:	Team 4
Impinger Box No.:	

Pitot Factor	0.848	
DGMCF	1.026	
Barometric Pressure	29.60	"Hg
Static Pressure	-9.9	"H2O
Nozzle Size	.2533	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter	1.1	mg
Probe	0.2	mg

Moisture Gain

CWTR	493.5	g
WCBDA	23.5	g

Combustion Gas Concentration

Oxygen	8.36	%
Carbon Dioxide	11.05	%
Carbon Monoxide	9.3	ppm

Measuring Device	MII Numbers
Probe / Pitot S7A	COE 20112
Trendicator	
Control Box	COE 20096
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	B03936
Barometer	Gr. Can.
Calipers	CAN22136

Nozzle Measurements	
1	.2530
2	.2530
3	.2535
4	.2535
Average:	.2533

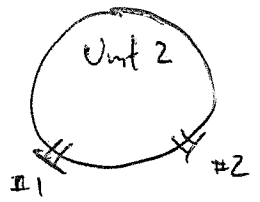
Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram



Notes:

Field Data Sheet

Date: Nov. 30/24	Plant: Covanta DYEC	Test No.: Particulate/Metals #1	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	29.97	.86	.78	289	257	253	79	98	88	89	2	6
	2.5	31.88	.87	.79	287	253	262	57	180	88	92	2	6
	5	33.88	.87	.79	287	255	252	53	199	89	93	2	6
2	7.5	35.88	.87	.79	287	255	256	51	205	89	94	2	6
	10	37.88	.87	.79	288	255	258	50	208	89	95	2	6
	12.5	39.87	.88	.80	288	256	254	50	211	89	96	2	6
3	15	41.85	.85	.78	288	256	257	50	212	89	96	2	6
	17.5	43.82	.85	.79	288	257	257	51	215	90	98	2	6
	20	45.81	.85	.79	288	257	257	51	216	90	98	2	6
4	22.5	47.80	.77	.75	288	256	258	51	218	91	99	1.8	6
	25	49.69	.78	.75	288	256	258	51	219	91	99	1.8	6
	27.5	51.57	.79	.76	288	257	261	52	220	91	100	1.8	6
5	30	53.46	.72	.73	288	257	252	52	221	91	100	1.7	6
	32.5	55.30	.72	.73	288	257	259	52	221	91	100	1.7	6
	35	57.13	.72	.73	288	257	254	52	222	92	101	1.7	6
6	37.5	58.98	.65	.69	288	258	259	52	223	92	101	1.5	6
	40	60.73	.64	.69	288	258	251	52	223	92	101	1.5	6
	42.5	62.47	.65	.69	288	257	259	51	223	92	101	1.5	6
7	45	64.22	.65	.69	289	258	253	51	223	92	101	1.5	6
	47.5	65.97	.65	.69	289	257	258	50	223	92	102	1.5	6
	50	67.72	.65	.69	289	257	252	50	223	92	102	1.5	6

Traverse: 2					
Start Time: 8:28	Initial Leak Check:	<.002	cfm@	15	"Hg
Finish Time: 9:51	Final Leak Check:	.006	cfm@	16	"Hg

Project No.: 22085

Operator : DV

Field Data Sheet

Date: Nov. 30	Plant: Covanta DYEC	Test No.: Particulate/Metals #1	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	69.46	.72	.73	289	258	258	52	223	93	102	1.7	6
	55	71.31	.73	.73	289	258	259	49	221	93	102	1.7	6
	57.5	73.17	.73	.73	289	258	252	48	220	93	102	1.7	6
9	60	75.03	.80	.77	289	257	259	48	223	93	102	2.0	6.5
	62.5	76.99	.75	.74	289	258	253	48	225	93	102	1.9	6.5
	65	78.93	.78	.76	289	258	257	48	225	93	102	1.9	6.5
10	67.5	80.87	.77	.75	290	257	252	47	225	93	102	1.8	6
	70	82.77	.80	.77	289	257	257	47	225	93	102	1.9	6.5
	72.5	84.72	.80	.81	290	258	262	47	226	93	102	1.9	6.5
11	75	86.68	.80	.77	290	258	253	47	226	93	102	1.9	6.5
	77.5	88.62	.70	.72	290	257	259	47	225	93	102	1.7	6.5
	80	90.50	.70	.72	286	257	255	47	225	93	102	1.7	6.5
12	82.5	92.35	.72	.73	286	257	261	47	225	93	102	1.7	6
	85	94.20	.71	.72	286	257	253	47	224	93	102	1.7	6
	87.5	96.07	.71	.72	286	257	260	47	224	93	102	1.7	6
	90	97.93											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22085

Operator : R

Field Data Sheet

Date: Nov. 30	Plant: Covanta DYEC	Test No.: Particulate/Metals (#1)	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	98.37	.80	.76	289	257	254	62	161	92	96	1.9	6.5
	2.5	100.31	.80	.76	289	256	259	47	213	92	98	1.9	6.5
	5	102.28	.79	.76	289	256	252	45	218	92	98	1.9	6.5
2	7.5	104.22	.85	.79	288	256	259	43	220	92	99	2.1	7
	10	106.28	.88	.80	288	256	253	43	221	92	99	2.1	7
	12.5	108.33	.88	.86	289	256	257	43	222	92	99	2.1	7
3	15	110.38	.85	.79	289	256	253	43	222	92	99	2	7
	17.5	112.40	.87	.80	289	256	256	43	222	92	99	2	7
	20	114.36	.87	.80	289	257	260	43	223	92	100	2	7
4	22.5	116.35	.84	.78	289	257	258	43	224	92	100	2	7
	25	118.32	.82	.77	289	257	255	43	225	92	100	2	7
	27.5	120.31	.82	.77	289	257	259	43	225	92	100	2	7
5	30	122.29	.76	.74	289	257	259	43	225	92	100	1.8	6.5
	32.5	124.13	.76	.74	289	257	258	44	226	92	100	1.8	6.5
	35	126.00	.75	.74	289	257	256	44	226	92	100	1.8	6.5
6	37.5	127.92	.64	.68	289	257	258	44	226	92	100	1.7	6
	40	129.75	.64	.65	288	257	253	44	226	92	101	1.7	6
	42.5	131.69	.63	.66	289	257	253	44	226	92	101	1.4	6
7	45	133.36	.70	.72	289	257	254	45	224	92	101	1.4	6
	47.5	135.96	.72	.73	289	257	252	45	225	92	101	1.6	6
	50	136.82	.73	.73	289	257	256	46	225	92	101	1.6	6

Traverse:					
Start Time: 9:59	Initial Leak Check:	.002	cfm@	16	"Hg
Finish Time: 11:29	Final Leak Check:	<.002	cfm@	15	"Hg

Project No.: 22085

Operator : RV

Field Data Sheet

Date: Nov. 30/21	Plant: Covanta DYEC	Test No.: Particulate/Metals #1	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. #2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	138.61	.71	.72	289	257	256	46	226	92	101	1.6	6
	55	140.38	.73	.73	289	257	256	46	226	92	101	1.6	6
	57.5	142.16	.74	.74	289	257	256	46	226	92	101	1.6	6
9	60	143.97	.79	.76	289	257	258	46	224	92	101	1.8	6.5
	62.5	145.84	.79	.76	289	257	259	46	224	92	101	1.9	6.5
	65	147.77	.78	.75	289	257	257	45	225	92	101	1.8	6.5
10	67.5	149.71	.78	.76	289	257	257	45	225	92	101	1.8	6.5
	70	151.60	.78	.76	289	257	257	45	225	92	101	1.8	6.5
	72.5	153.51	.78	.76	289	257	257	46	225	92	101	1.8	6.5
11	75	155.43	.74	.74	289	257	258	46	226	92	101	1.7	6.5
	77.5	157.29	.70	.72	289	257	258	46	226	92	101	1.6	6.5
	80	159.16	.70	.72	289	257	258	46	226	92	101	1.6	6.5
12	82.5	161.04	.72	.73	289	257	258	46	226	92	101	1.6	6.5
	85	162.91	.64	.68	289	257	258	46	226	92	101	1.4	~~6.5~~ 6
	87.5	164.56	.64	.68	289	257	258	47	226	92	100	1.4	6
	90	166.28											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22085

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	Particulate/Metals #2
Test Date	Dec 1/21
Test Location	APC Outlet No. 2
Operator	RV

Project No.:	22085
Page	1 of 5
Probe No.:	
Meter Box No.:	Team 4
Impinger Box No.:	

Pitot Factor	0.844	
DGMCF	1.026	
Barometric Pressure	29.82	"Hg
Static Pressure	-10.6	"H2O
Nozzle Size	.2556	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter	<0.1	mg
Probe	1.8	mg

Moisture Gain

CWTR	493.2	g
WCBDA	21.3	g

Combustion Gas Concentration

Oxygen	8.79	%
Carbon Dioxide	10.89	%
Carbon Monoxide	12.5	ppm

Measuring Device	MII Numbers
Probe / Pitot 15E	COE 20013
Trendicator	
Control Box	COE 20090
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	B03936
Barometer	Env. Can.
Calipers	CAN 22136

Nozzle Measurements	
1	.2550
2	.2560
3	.2555
4	.2560
Average:	.2556

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: Dec 1	Plant: Covanta DYEC	Test No.: Particulate/Metals #2	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	25.18	0.92	.82	289	260	260	81	110	88	87	2.1	6
	2.5	27.28	0.90	.81	288	260	252	54	212	88	92	2.1	6
	5	29.30	.90	.81	288	260	252	51	214	88	93	2.1	6
2	7.5	31.31	.94	.83	288	265	250	50	214	88	94	2.2	6
	10	33.45	.92	.82	288	262	260	51	214	89	96	2.2	6
	12.5	35.55	.93	.83	288	264	260	51	214	89	96	2.2	6
3	15	37.65	.95	.84	288	265	262	54	213	90	98	2.2	6
	17.5	39.71	.95	.84	288	262	252	55	213	90	98	2.2	6
	20	41.83	.94	.84	289	262	261	52	213	90	98	2.2	6
4	22.5	43.95	.85	.80	289	264	257	53	248	91	100	2	6
	25	45.85	.85	.80	289	266	257	55	250	91	100	2	6
	27.5	47.96	.88	.81	289	266	257	55	250	91	100	2.1	6
5	30	49.99	.81	.78	290	266	253	53	250	92	101	1.9	6
	32.5	51.96	.81	.78	289	262	260	52	249	92	101	1.9	6
	35	53.93	.80	.77	289	265	253	52	250	92	101	1.9	6
6	37.5	55.91	.70	.72	289	265	257	52	250	92	101	1.7	6
	40	57.76	.70	.72	289	265	252	52	250	92	101	1.7	6
	42.5	59.61	.68	.72	289	264	259	50	250	93	102	1.6	6
7	45	61.42	.70	.73	289	264	259	50	248	93	102	1.6	6
	47.5	63.23	.70	.73	287	264	259	50	248	93	102	1.6	6
	50	65.05	.70	.73	289	264	259	50	248	93	102	1.6	6

Traverse:					
Start Time: 8:31	Initial Leak Check:	<.002	cfm@	17	"Hg
Finish Time: 10:01	Final Leak Check:	<.002	cfm@	15	"Hg

Project No.: 22085

Operator :

Field Data Sheet

Date: Dec 1	Plant: Covanta DYEC	Test No.: Particulate/Metals #2	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	66.83	.72	.74	288	264	259	49	247	93	103	1.6	6
	55	68.66	.70	.74	287	265	259	49	248	94	103	1.6	6
	57.5	70.50	.72	.74	287	265	259	48	248	94	103	1.6	6
9	60	72.31	.75	.75	286	264	258	47	249	94	104	1.7	6
	62.5	74.18	.75	.75	287	261	252	47	248	94	104	1.7	6
	65	76.05	.74	.75	287	261	261	47	249	94	104	1.7	6
10	67.5	77.93	.75	.75	287	263	252	47	248	94	104	1.7	6
	70	79.80	.75	.75	287	264	259	47	249	94	104	1.7	6
	72.5	81.67	.76	.76	287	263	256	47	247	95	104	1.7	6
11	75	83.54	.75	.75	287	263	257	47	248	95	104	1.7	6
	77.5	85.41	.74	.75	287	260	258	47	247	95	104	1.7	6
	80	87.28	.74	.75	287	265	254	47	247	95	104	1.7	6
12	82.5	89.15	.74	.75	287	263	260	47	247	95	104	1.7	6
	85	91.01	.60	.67	287	263	252	47	246	95	104	1.5	6
	87.5	92.76	.60	.67	287	265	260	48	247	95	104	1.5	6
	90	94.49											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22085

Operator : RV

Field Data Sheet

Date: Dec	Plant: Covanta DYEC	Test No.: Particulate/Metals #2	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	94.91	.90	.82	288	259	256	62	178	94	99	2.1	6
	2.5	96.99	.90	.82	287	257	255	50	239	94	101	2.1	6
	5	98.99	.89	.82	287	261	260	48	249	94	101	2.1	6
2	7.5	101.20	.91	.83	287	262	254	48	247	95	102	2.2	6
	10	103.31	.90	.83	287	264	258	49	250	95	102	2.1	6
	12.5	105.46	.91	.83	287	263	252	50	250	95	103	2.1	6
3	15	107.53	.89	.82	287	265	256	50	251	95	103	2	6
	17.5	109.61	.87	.81	287	265	256	50	250	95	103	2	6
	20	111.64	.87	.81	287	265	257	51	249	95	104	2	6
4	22.5	113.68	.85	.80	287	265	260	51	251	95	104	2	6
	25	115.66	.84	.80	287	259	252	51	250	95	104	2	6
	27.5	117.67	.85	.80	288	265	250	51	252	95	104	2	6
5	30	119.69	.74	.75	288	261	251	51	252	95	104	1.8	6
	32.5	121.61	.75	.76	288	265	257	52	252	96	104	1.8	6
	35	123.53	.73	.75	288	265	253	52	252	96	104	1.8	6
6	37.5	125.45	.73	.75	288	264	255	50	251	96	105	1.8	6
	40	127.36	.65	.70	288	262	258	49	250	96	105	1.6	6
	42.5	129.18	.64	.70	288	261	256	49	251	96	105	1.6	6
7	45	131.00	.72	.74	288	261	258	48	249	96	105	1.8	6
	47.5	132.88	.72	.74	289	264	258	48	250	96	105	1.8	6
	50	134.79	.72	.74	289	262	260	48	250	96	105	1.8	6

Traverse:	2				
Start Time:	10:09	Initial Leak Check:	.002	cfm@ 15	"Hg
Finish Time:	11:39	Final Leak Check:	.004	cfm@ 20	"Hg

Project No.: 22085

Operator : RV

Field Data Sheet

Date: Dec 1	Plant: Covanta DYEC	Test No.: Particulate/Metals #2	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	136.69	.76	.77	289	262	260	48	250	96	105	2	6
	55	138.69	.78	.77	289	259	259	47	252	96	105	2	6
	57.5	140.68	.77	.77	289	261	253	48	250	96	105	2	6
9	60	142.68	.84	.80	289	260	257	48	250	96	105	2.1	6
	62.5	144.74	.82	.79	289	263	258	48	250	97	105	2.1	6
	65	146.79	.79	.78	289	265	248	48	252	97	105	2	6
10	67.5	148.79	.74	.75	289	265	247	48	250	97	105	1.8	6
	70	150.70	.74	.75	289	259	247	49	251	97	105	1.8	6
	72.5	152.62	.74	.75	289	264	260	49	249	97	106	1.8	6
11	75	154.54	.62	.69	289	265	256	49	251	97	106	1.5	6
	77.5	156.31	.65	.71	289	263	262	49	249	97	106	1.5	6
	80	158.04	.65	.71	289	262	253	50	249	97	106	1.5	6
12	82.5	159.79	.55	.65	289	262	261	50	249	97	106	1.3	6
	85	161.43	.55	.65	289	264	253	50	248	97	106	1.3	6
	87.5	163.07	.54	.64	289	261	259	51	248	97	106	1.3	6
	90	164.80											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22085

Operator : RV

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	Particulate/Metals #3
Test Date	Dec 1
Test Location	APC Outlet No. 2
Operator	RV

Project No.:	22085
Page	1 of 5
Probe No.:	
Meter Box No.:	Team 4
Impinger Box No.:	

Pitot Factor	.844	
DGMCF	1.026	
Barometric Pressure	29.78	"Hg
Static Pressure	-10.9	"H2O
Nozzle Size	.2556	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter	0.7	mg
Probe	0.5	mg

Moisture Gain

CWTR	488.2	g
WCBDA	23.1	g

Combustion Gas Concentration

Oxygen	9.16	%
Carbon Dioxide	10.60	%
Carbon Monoxide	18.9	ppm

Measuring Device	MII Numbers
Probe / Pitot	COE 20113
Trendicator	
Control Box	COE 200910
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	B09936
Barometer	Env. Can
Calipers	CAN 22136

Nozzle Measurements	
1	.2550
2	.2560
3	.2555
4	.2560
Average:	.2556

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: Dec 1	Plant: Covanta DYEC	Test No.: Particulate/Metals #3	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	65.56	0.83	0.79	288	254	249	78	121	94	96	2.0	6
	2.5	67.58	0.85	0.80	286	259	251	60	198	95	99	2.0	6
	5	69.57	0.86	0.80	288	257	258	57	211	93	100	2.0	6
2	7.5	71.55	0.86	0.81	287	261	255	57	218	95	101	2.1	6
	10	73.58	0.87	0.81	287	260	255	54	224	95	102	2.1	6
	12.5	75.62	0.87	0.81	287	258	256	55	229	96	103	2.1	6
3	15	77.65	0.85	0.80	287	262	256	56	233	96	104	2.1	6
	17.5	79.68	0.87	0.81	287	262	256	56	236	96	105	2.1	6
	20	81.73	0.86	0.81	287	260	256	56	238	96	105	2.1	6
4	22.5	83.76	0.78	0.77	286	260	256	56	239	97	105	1.9	6
	25	85.71	0.80	0.78	287	262	257	56	240	97	106	1.9	6
	27.5	87.66	0.83	0.80	287	265	254	57	241	97	106	2.0	6
5	30	89.66	0.77	0.77	287	261	256	58	243	97	106	2.0	6
	32.5	91.65	0.78	0.77	287	263	258	57	242	98	107	1.9	6
	35	93.62	0.78	0.77	287	264	253	57	244	98	107	1.9	6
6	37.5	95.55	0.69	0.73	287	260	255	56	244	98	107	1.8	6
	40	97.42	0.69	0.73	287	262	258	56	244	98	107	1.8	6
	42.5	99.29	0.67	0.72	287	264	254	56	245	98	107	1.8	6
7	45	101.16	0.73	0.75	288	258	255	55	245	98	107	1.8	6
	47.5	103.02	0.75	0.76	288	264	255	54	244	98	107	1.8	6
	50	104.88	0.75	0.76	288	263	256	53	245	98	107	1.8	6

Traverse: 1					
Start Time: 12:24	Initial Leak Check:	<0.001	cfm@	16	"Hg
Finish Time: 13:51	Final Leak Check:		cfm@		"Hg

Project No.: 22085

Operator : BM

Field Data Sheet

Date: Dec 1, 2021	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	106.78	0.78	0.77	288	262	256	55	246	98	107	1.8	6
	55	108.67	0.78	0.77	288	262	255	52	248	98	108	1.9	6
	57.5	110.62	0.78	0.77	289	263	257	52	248	99	108	1.9	6
9	60	112.56	0.80	0.78	289	264	257	52	249	99	108	1.9	6
	62.5	114.52	0.84	0.80	289	261	256	52	249	99	108	2.0	6
	65	116.51	0.85	0.81	289	258	255	52	249	99	108	2.0	6
10	67.5	118.50	0.88	0.82	290	260	259	52	251	99	108	2.1	6
	70	120.55	0.86	0.81	291	263	255	52	250	99	108	2.1	6
	72.5	122.59	0.86	0.81	291	261	258	51	251	99	108	2.1	6
11	75	124.62	0.75	0.76	281	264	256	51	250	99	108	1.8	6
	77.5	126.56	0.75	0.76	279	261	255	51	250	99	108	1.8	6
	80	128.49	0.74	0.77	279	264	256	51	250	99	108	1.8	6
12	82.5	130.42	0.73	0.76	278	263	257	51	249	99	108	1.8	6
	85	132.35	0.76	0.77	277	264	257	51	251	99	108	1.8	6
	87.5	134.28	0.74	0.76	277	263	255	51	250	99	108	1.8	6
	90	136.19											

Traverse:				
Start Time:	Initial Leak Check:	—	cfm@	— "Hg
Finish Time:	Final Leak Check:	.01	cfm@	13 "Hg

Project No.: 22085

Operator : BM

Field Data Sheet

Date: Dec 1, 2021	Plant: Covanta DYEC	Test No.: 3	Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	~~137~~ 136.98	0.90	0.83	288	262	261	81	137	98	101	2.1	6
	2.5	139.09	0.91	0.83	289	258	252	58	227	98	103	2.1	6
	5	141.08	0.90	.83	289	261	258	57	242	98	104	2	6
2	7.5	143.05	0.93	.84	289	260	257	57	243	99	105	2.2	6.5
	10	145.12	0.92	.84	289	259	254	53	243	98	106	2.2	6.5
	12.5	147.24	0.92	.84	289	259	254	53	243	98	106	2.2	6.5
3	15	149.35	0.88	.82	288	260	255	54	244	99	106	2.1	6.5
	17.5	151.38	.88	.82	288	264	255	54	244	99	107	2.1	6.5
	20	153.46	.88	.82	287	264	255	54	244	99	107	2.1	6.5
4	22.5	155.41	0.81	0.79	287	264	258	55	244	99	107	2.1	6.5
	25	157.46	0.81	0.79	287	262	256	54	244	99	107	2.0	6.5
	27.5	159.46	0.80	0.79	287	264	255	53	243	99	108	2.0	6.5
5	30	161.48	0.73	0.75	286	265	255	52	242	99	108	2.0	6.5
	32.5	163.49	0.73	0.75	286	264	256	52	243	99	108	1.9	6.5
	35	165.44	0.72	0.75	286	262	256	52	242	99	108	1.8	6.5
6	37.5	167.36	0.73	0.75	285	262	255	52	242	99	108	1.8	6.5
	40	169.24	0.63	0.70	285	264	256	51	241	100	108	1.7	6.5
	42.5	~~171~~.09	0.63	0.70	285	264	256	51	242	100	108	1.6	6.5
7	45	172.91	0.68	0.73	285	263	255	52	241	100	108	1.6	6.5
	47.5	174.70	0.67	0.72	285	258	256	51	242	100	108	1.7	6.5
	50	176.55	0.69	0.73	285	263	255	51	241	100	108	1.7	6.5

Traverse: 2			
Start Time: 14:08	Initial Leak Check: < .005	cfm@ 10	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22085

Operator : BM

Field Data Sheet

Date: Dec 1, 2021	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
8	52.5	178.38	0.72	0.75	285	262	255	51	243	100	109	1.7	6.5
	55	180.23	0.72	0.75	285	260	257	51	242	100	109	1.7	6.5
	57.5	182.07	0.73	0.75	285	260	255	50	242	100	109	1.8	6.5
9	60	183.97	0.76	0.77	285	258	255	50	242	100	109	1.8	6.5
	62.5	185.87	0.72	0.75	285	260	258	50	242	100	109	1.9	6.5
	65	187.80	0.76	0.77	285	258	254	49	243	100	109	1.8	6.5
10	67.5	189.70	0.80	0.79	285	264	258	49	243	100	109	1.8	6.5
	70	191.60	0.78	0.78	285	264	255	49	243	100	109	1.9	6.5
	72.5	193.56	0.76	0.77	285	258	256	49	243	100	109	1.9	6.5
11	75	195.52	0.67	0.72	285	261	257	49	244	100	109	1.7	6.5
	77.5	197.35	0.68	0.73	285	262	256	50	243	100	109	1.7	6.5
	80	199.18	0.68	0.73	285	264	258	50	243	100	109	1.7	6.5
12	82.5	201.00	0.49	0.62	285	262	260	50	243	100	109	1.4	6.5
	85	202.65	0.51	0.63	285	260	258	50	241	100	109	1.4	6.5
	87.5	204.30	0.49	0.62	285	258	257	51	238	100	109	1.4	6.5
	90	205.96											

Traverse: 2			
Start Time: 15:38	Initial Leak Check: <0.002	cfm@ 16	"Hg
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg

Project No.: 22085

Operator: BM

APPENDIX 5

Particle Size Distribution Field Data Sheets
(12 pages)

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	1 Particle Size
Test Date	NOVEMBER 30, 2021
Test Location	APC Outlet No. E1
Operator	RM

Project No.:	22085
Page	1 of
Probe No.:	S
Meter Box No.:	T1
Impinger Box No.:	

Pitot Factor	0.845	
DGMCF	1.000	
Barometric Pressure	29.60	"Hg
Static Pressure	-11.6 -10.3	"H2O
Nozzle Size	0.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	DWELL
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	155.4	g
WCBDA	9.0	g

Combustion Gas Concentration

Oxygen	8.59	%
Carbon Dioxide	10.77	%
Carbon Monoxide	8.1	ppm

Measuring Device	MII Numbers
Probe / Pitot	
Trendicator	SEE
Control Box	TEST
Incline Manometer	1
Comb.Gas.Analyzer	UNIT
Micromanometer	3039186
Barometer	
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	

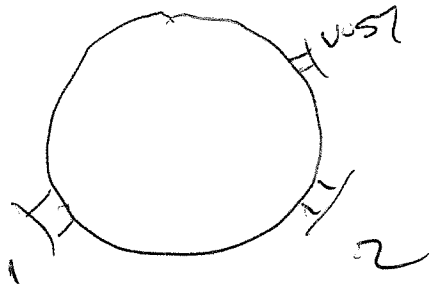
Probe Liner Glass / Metal /Teflon / Other PFA

Nozzle Glass / Metal / Other_____

Union None / Metal / Teflon / Other_____

Pitot Leak Checked? Yes No

Site Diagram



Notes:

Field Data Sheet

Date: Nov 30/21	Plant: Covanta DYEC	Test No.: 1 Particle Size	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 3E 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	82.79	.98	.35	283	260	256	53	39	89	89	.39	3
2	10.7	86.54	.92		284	266	259	64	39	90	86	.38	3
3	21.2	90.17	.85		284	263	259	61	44	91	89	.38	3
4	31.4	93.90	.86		284	261	259	61	47	92	90	.38	3
5	41.4	97.81	.77		284	262	260	61	49	92	90	.38	3
6	50.9	101.27	.69		284	262	258	61	52	92	90	.38	3
	59.8	104.56											
1	0	104.56	1.02		282	262	260	64	53	91	89	.38	3
2	10.5	108.40	.97		284	262	259	66	56	91	89	.38	3
3	21.0	112.20	.90		283	262	259	66	55	92	90	.38	3
4	31.4	115.90	.83		283	262	260	66	59	92	90	.38	3
5	41.7	119.56	.73		283	252	260	65	57	92	90	.38	3
6	51.1	122.99	.63		283	253	261	64	56	93	91	.38	3
	60.2	126.74											

Traverse: 2			Traverse: 1		
Start Time: 830	Initial Leak Check: .002 cfm@ 16 "Hg		Start Time: 933	Initial Leak Check:	cfm @ "Hg
Finish Time: 930	Final Leak Check: cfm@ "Hg		Finish Time: 1033	Final Leak Check:	cfm @ "Hg

Project No.: 22085

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Particle Size
Test Date	NOV 30/21
Test Location	APC Outlet No. 1
Operator	RM

Project No.:	22085
Page	1 of
Probe No.:	5
Meter Box No.:	7
Impinger Box No.:	

Pitot Factor	0.845	
DGMCF	1.000	
Barometric Pressure	29.86	"Hg
Static Pressure	-11.6 ~~-10.8~~	"H2O
Nozzle Size	0.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	DWELL
Number of Ports	2
Number of Points/Port	12

Probe Liner Glass / Metal /Teflon / Other PFA

Nozzle Glass / Metal / Other_____

Union None / Metal / Teflon / Other_____

Pitot Leak Checked? Yes No

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	150.9	g
WCBDA	9.6	g

Combustion Gas Concentration

Oxygen	8.62	%
Carbon Dioxide	10.73	%
Carbon Monoxide	10.2	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	TEST
Control Box	1
Incline Manometer	UNIT R
Comb.Gas.Analyzer	
Micromanometer	803936
Barometer	
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Site Diagram

Notes:

Field Data Sheet

Date: Nov 30/24	Plant: Covanta DYEC	Test No.: 2 Particle Size	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	26.93	.90	.35	252	260	265	55	56	90	89	.38	3
2	10.8	31.03	.86		252	261	264	56	61	90	89	.38	3
3	21.2	34.84	.81		253	261	264	55	60	91	89	.38	3
4	31.3	38.45	.77		252	260	264	55	60	91	89	.38	3
5	41.4	42.08	.71		253	261	263	57	61	92	90	.38	3
6	51.0	45.75	.63		253	259	264	57	62	92	90	.38	3
	60.0	49.30											
1	0	49.30	.90		253	256	262	65	67	91	89	.38	3
2	11.0	53.33	.82		253	256	260	64	63	91	89	.38	3
3	21.7	57.14	.82		253	257	261	63	60	91	89	.38	3
4	32.1	60.95	.79		253	250	260	62	60	92	90	.38	3
5	42.0	64.50	.67		253	251	260	61	60	92	90	.38	3
6	51.3	67.91	.61		253	251	260	61	60	92	90	.38	3
	60.0	70.95											

Traverse: 2				
Start Time: 1130	Initial Leak Check: .005	cfm@ 16	"Hg
Finish Time: 1230	Final Leak Check:	cfm@	"Hg

Traverse: 1				
Start Time: 1233	Initial Leak Check:	cfm @	"Hg
Finish Time: 1333	Final Leak Check:	cfm @	"Hg

Project No.: 22085

Operator : RM

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Particle Size
Test Date	NOVEMBER 30, 2021
Test Location	APC Outlet No. 1
Operator	RW

Project No.:	22085
Page	1 of
Probe No.:	5
Meter Box No.:	T1
Impinger Box No.:	

Pitot Factor	0.845	
DGMCF	1.000	
Barometric Pressure	29.52	"Hg
Static Pressure	~~-10.8~~ -11.6	"H2O
Nozzle Size	.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	DWELL
Number of Ports	2
Number of Points/Port	12

Probe Liner Glass / Metal /Teflon / Other RAP

Nozzle Glass / Metal / Other_____

Union None / Metal / Teflon / Other_____

Pitot Leak Checked? Yes No

Particulate Gain

Filter	mg
Probe	mg

Moisture Gain

CWTR	172.6	g
WCBDA	92.7	g

Combustion Gas Concentration

Oxygen	8.66	%
Carbon Dioxide	10.62	%
Carbon Monoxide	15.2	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	TEST
Control Box	1
Incline Manometer	
Comb.Gas.Analyzer	UNIT
Micromanometer	1
Barometer	
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Site Diagram

Notes:

Field Data Sheet

Date: NOV 30/21	Plant: Covanta DYEC	Test No.: 3 Particle Size	Page of
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	71.11	.98	.35	282	252	262	62	75	89	88	.38	3
2	10.8	75.26	.97		284	260	260	59	61	89	89	.38	3
3	21.4	79.26	.93		286	261	260	57	61	91	89	.38	3
4	31.6	83.00	.86		285	261	260	55	60	91	89	.38	3
5	41.6	86.69	.81		286	261	260	55	60	91	89	.38	3
6	51.2	90.49	.68		287	261	260	55	60	91	89	.38	3
	60.2	93.94											
1	0	93.94	.94		283	261	260	56	65	90	89	.38	3
2	10.8	97.86	.92		286	262	261	55	60	91	90	.38	3
3	21.1	101.56	.86		286	262	261	55	60	91	90	.38	3
4	31.4	105.26	.80		286	261	261	53	61	91	90	.38	3
5	41.5	108.90	.75		286	261	261	55	60	91	90	.38	3
6	50.9	113.12	.67		286	261	260	54	61	91	90	.38	3
	59.8	116.33											

Traverse: 2			
Start Time: 1435	Initial Leak Check: .003	cfm@ 16	"Hg
Finish Time: 1535	Final Leak Check:	cfm@	"Hg

Traverse: 1			
Start Time: 1538	Initial Leak Check:	cfm @	"Hg
Finish Time: 1638	Final Leak Check:	cfm @	"Hg

Project No.: 22085

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	1 Particle Size
Test Date	NOVEMBER 29, 2021
Test Location	APC Outlet No. 2
Operator	RW

Project No.:	22085
Page	1 of
Probe No.:	5
Meter Box No.:	TEAM 1
Impinger Box No.:	11

Pitot Factor	0.845	
DGMCF	1.000	
Barometric Pressure	29.74	"Hg
Static Pressure	-9.1	"H2O
Nozzle Size	0.1776	inches
Stack Diameter	4.5	feet
Length	–	feet
Width	–	feet
Port length:	11	inches

Reading Interval	DWELL
Number of Ports	2
Number of Points/Port	12

Probe Liner Glass / Metal /Teflon / Other PFA

Nozzle Glass / Metal / Other_____

Union None / Metal / Teflon / Other_____

Pitot Leak Checked? Yes No

Particulate Gain

Filter	mg
Probe	mg

Moisture Gain

CWTR	149.1 ~~154.9~~	g
WCBDA	16.5 ~~9.7~~	g

Combustion Gas Concentration

Oxygen	8.98	%
Carbon Dioxide	10.81	%
Carbon Monoxide	10.2	ppm

Site Diagram



Measuring Device	MII Numbers
Probe / Pitot	PM10/2.5
Trendicator	3
Control Box	3COE200741
Incline Manometer	3
Comb.Gas.Analyzer	
Micromanometer	
Barometer	ENV. CAN
Calipers	B03906

Nozzle Measurements	
1	0.1775
2	0.1775
3	0.1775
4	0.1780
Average:	

Notes:

Field Data Sheet

Date: Nov 29/24	Plant: Covanta DYEC	Test No.: 1	Particle Size	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	51.91	.96	.35	288	266	253	84	86	84	83	0.35	3
2	10.7	55.62	.90		288	264	252	72	80	85	83	0.36	3
3	21.2	59.36	.80		289	266	260	65	65	87	83	0.38	3
4	31.4	63.03	.82		290	265	263	62	64	88	84	0.38	3
5	41.4	66.60	.73		291	267	268	61	63	90	86	0.38	3
6	50.9	70.04	.65		291	266	269	60	65	90	86	0.38	3
	59.8	73.20											
1	0	73.20	.88		288	267	269	65	87	91	87	.38	3
2	10.5	76.77.04	.84		290	265	267	60	64	91	86	.38	3
3	21.0	80.95	.80		289	265	266	59	63	92	88	.38	3
4	31.4	84.63	.78		289	265	266	56	62	93	89	.38	3
5	41.7	88.36	.74		289	265	267	61	62	93	89	.38	3
6	51.1	91.68	.61		288	242	235	62	62	89	88	.38	3
	60.2	94.98											

Traverse: 2				Traverse: 1			
Start Time: 10:00	Initial Leak Check: .003	cfm@ 15	"Hg	Start Time: 11:03	Initial Leak Check:	cfm @	"Hg
Finish Time: 11:00	Final Leak Check:	cfm@	"Hg	Finish Time: 12:03	Final Leak Check: ✓	cfm @	"Hg

Project No.: 22085

Operator : RM

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Particle Size
Test Date	NOVEMBER 29 2021
Test Location	APC Outlet No. 21
Operator	DM

Project No.:	22085
Page	1 of
Probe No.:	
Meter Box No.:	TEAM 1
Impinger Box No.:	

Pitot Factor	0.845	
DGMCF	1.000	
Barometric Pressure	29.71	"Hg
Static Pressure	-9.1	"H2O
Nozzle Size	0.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter	mg
Probe	mg

Moisture Gain

CWTR	146.1 ~~140.8~~	g
WCBDA	10.8 ~~12.5~~	g

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	TEST
Incline Manometer	
Comb.Gas.Analyzer	1
Micromanometer	
Barometer	
Calipers	

Reading Interval	RUN	
Number of Ports	2	
Number of Points/Port	12	

Combustion Gas Concentration

Oxygen	9.12	%
Carbon Dioxide	10.53	%
Carbon Monoxide	10.8	ppm

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Probe Liner Glass / Metal /Teflon / Other N/A

Nozzle Glass / Metal / Other_____

Union None / Metal / Teflon / Other_____

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: NOV 29/21	Plant: Covanta DYEC	Test No.: 2 Particle Size	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	95.13	1.10	.35	292	263	262	79	61	87	87	.38	3
2	11.0	99.10	.94		294	263	267	62	65	86	86	.34	3
3	21.6	102.98	.92		294	264	267	62	64	85	85	.38	3
4	32.1	106.75	.86		293	263	265	60	63	87	85	.38	3
5	42.3	110.45	.82		294	262	264	60	62	88	86	.38	3
6	51.9	113.81	.71		295	263	264	60	62	88	87	.38	3
	60.9	117.06											
1	0	117.06	1.0		292	261	262	60	68	90	89	.38	3
2	10.5	120.93	.97		298	261	261	59	67	89	89	.38	3
3	20.96	124.56	.92		300	261	260	58	65	89	88	.36	3
4	30.6	128.24	.83		298	266	266	59	63	90	88	.35	3
5	40.7	131.92	.75		296	266	265	59	64	91	89	.38	3
6	50.4	135.49	.66		294	266	264	59	63	90	89	.38	3
	59.1	136.78											

Traverse: 2				
Start Time: 1330	Initial Leak Check: .002	cfm@ 15	"Hg
Finish Time: 1430	Final Leak Check:	cfm@	"Hg

Traverse: 1				
Start Time: 1439	Initial Leak Check:	cfm @	"Hg
Finish Time: 1538	Final Leak Check:	cfm @	"Hg

Project No.: 22085

Operator : RM

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Particle Size
Test Date	NOVEMBER 29 2021
Test Location	APC Outlet No. 2
Operator	RW

Project No.:	22085
Page	1 of
Probe No.:	5
Meter Box No.:	T1
Impinger Box No.:	11

Pitot Factor	0.845	
DGMCF	1.000	
Barometric Pressure	29.71	"Hg
Static Pressure	-9.1	"H2O
Nozzle Size	0.1776	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	DWELL
Number of Ports	2
Number of Points/Port	12

Probe Liner Glass / Metal /Teflon / Other PPL

Nozzle Glass / Metal / Other_____

Union None / Metal / Teflon / Other_____

Pitot Leak Checked? Yes No

Particulate Gain

Filter	mg
Probe	mg

Moisture Gain

CWTR	157.5 ~~157.7~~	g
WCBDA	12.0 ~~7.5~~	g

Combustion Gas Concentration

Oxygen	8.85	%
Carbon Dioxide	10.76	%
Carbon Monoxide	9.4	ppm

Measuring Device	MII Numbers
Probe / Pitot	
Trendicator	SEE
Control Box	
Incline Manometer	TEST
Comb.Gas.Analyzer	
Micromanometer	1
Barometer	
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Site Diagram

Notes:

Field Data Sheet

Date: Nov 29/21	Plant: Covanta DYEC	Test No.: 3	Particle Size	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	38.95	.91	.35	290	264	260	61	57	88	87	.38	3
2	10.8	42.81	.90		296	266	261	65	64	87	86	.38	3
3	21.2	46.56	.84		296	265	261	64	63	89	87	.38	3
4	31.6	50.34	.76		295	261	261	63	64	89	87	.38	3
5	41.5	53.95	.69		295	261	260	62	63	89	87	.38	3
6	51.3	57.54	.63		295	262	261	62	62	90	88	.38	3
	60.4	60.79											
1	0	60.79	.84		292	261	260	61	60	90	88	.38	3
2	10.6	64.82	.84		295	261	262	61	63	90	89	.38	3
3	21.4	68.63	.87		295	260	261	62	62	90	89	.38	3
4	31.7	72.35	.85		296	261	260	61	62	90	89	.38	3
5	41.5	76.00	.78		297	261	261	62	63	91	90	.38	3
6	50.9	79.37	.66		297	262	260	63	64	91	90	.38	3
	59.6	82.52											

Traverse: 2				Traverse: 1			
Start Time: 1632	Initial Leak Check: .003	cfm@ 16	"Hg	Start Time: 1735	Initial Leak Check:	cfm @	"Hg
Finish Time: 1732	Final Leak Check:	cfm@	"Hg	Finish Time: 1835	Final Leak Check:	cfm @	"Hg

Project No.: 22085

Operator : DM

APPENDIX 6

SVOC Data Sheets
(30 pages)

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Semi-Volatile Organic Compounds
Test Date	DECEMBER 1, 2021
Test Location	APC Outlet No. 1
Operator	RM

Project No.:	22085
Page	1 of 5
Probe No.:	6
Meter Box No.:	T1
Impinger Box No.:	10

Pitot Factor	0.849	
DGMCF	1.000	
Barometric Pressure	29.82	"Hg
Static Pressure	-11.7 ~~-10.2~~	"H2O
Nozzle Size	0.2520	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	2
Number of Points/Port	12

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	620.5	g
WCBDA	169	g

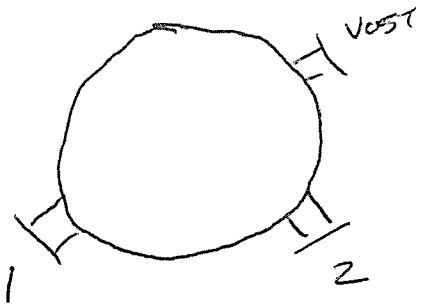
Combustion Gas Concentration

Oxygen	8.2	%
Carbon Dioxide	10.9	%
Carbon Monoxide	10.3	ppm

Measuring Device	MII Numbers
Probe / Pitot	SP2
Trendicator	
Control Box	CCE 20094
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	ENV.CAN
Calipers	B03936

Nozzle Measurements	
1	.2520
2	.2510
3	.2530
4	.2520
Average:	

Site Diagram



Notes:

Field Data Sheet

Date: Dec 1/21	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	16.69	.83	.77	284	242	261	58	44	89	88	1.8	4
	5	20.40	.83	.77	284	245	260	51	41	89	88	1.9	4
2	10	24.16	.78	.75	283	247	262	50	42	90	89	1.9	4
	15	28.07	.79	.76	282	247	261	50	42	91	89	1.9	4
3	20	31.96	.73	.73	282	247	262	50	42	91	89	1.7	4.5
	25	35.66	.75	.74	281	247	262	50	42	92	90	1.7	4.5
4	30	39.33	.72	.73	281	247	262	51	41	92	89	1.7	4.5
	35	42.99	.71	.72	281	246	262	51	41	93	90	1.7	4.5
5	40	46.66	.69	.71	281	246	262	51	41	93	90	1.7	4.5
	45	50.33	.68	.71	281	246	262	51	41	95	90	1.7	4.5
6	50	53.98	.58	.65	280	246	261	51	41	95	90	1.3	4
	55	57.30	.57	.65	279	246	262	52	41	95	91	1.3	4
7	60	60.57	~~.68~~ .69	.70	280	246	264	53	41	96	91	1.3	4
	65	63.81	.71	.72	280	244	263	52	41	96	92	1.7	4.5
8	70	67.43	.70	.72	281	236	263	52	41	96	92	1.7	4.5
	75	71.11	.71	.72	281	243	263	53	41	96	92	1.7	4.5
9	80	74.72	.75	.74	281	245	263	52	42	96	92	1.8	5
	85	78.47	.76	.69	281	245	263	52	42	96	93	1.8	5
10	90	82.22	.73	.74	281	246	262	52	42	96	93	1.8	5
	95	85.96	.74	.74	281	246	262	52	42	96	93	1.8	5
11	100	89.70	.63	.68	281	246	262	52	42	96	93	1.5	4.5

Traverse: 2					Traverse:				
Start Time: 857	Initial Leak Check: .001	cfm@ 15	"Hg		Start Time:	Initial Leak Check:	cfm @	"Hg	
Finish Time:	Final Leak Check:	cfm@	"Hg		Finish Time:	Final Leak Check:	cfm @	"Hg	

F 0.9493

Project No.: 22085

Operator : DM

Field Data Sheet

Date: DEC 1/21	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	93.22	.62	.68	281	245	264	53	41	97	93	1.5	4.5
12	110	96.72	.62	.68	281	245	265	54	41	97	93	1.5	4.5
	115	100.21	.62	.68	281	245	264	54	41	97	94	1.5	4.5
	120	103.72											

Traverse: 2			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time: 1031	Final Leak Check: .003	cfm@ 17	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

-10.5

Project No.: 22085

Operator : RM

Field Data Sheet

Date: DEC 1/21	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	104.11	.79	.77	281	244	264	60	44	96	94	1.9	5
	5	107.94	.79	.77	282	245	263	50	46	96	94	1.9	5
2	10	111.88	.79	.76	282	244	264	48	45	97	94	1.9	5
	15	115.68	.81	.78	283	245	264	48	46	97	94	1.9	5
3	20	119.55	.79	.77	284	245	264	47	44	98	94	1.9	5
	25	123.41	.78	.76	284	246	265	47	44	98	94	1.9	5
4	30	127.27	.73	.74	284	246	265	47	44	98	94	1.9	5
	35	131.13	.71	.73	284	245	265	49	46	99	95	1.9	5
5	40	134.98	.65	.70	284	246	263	50	46	99	95	1.5	5
	45	138.52	.65	.70	284	246	263	50	46	99	95	1.5	5
6	50	142.03	.61	.67	284	245	263	51	46	99	95	1.5	5
	55	145.54	.62	.68	284	245	263	51	45	99	95	1.5	5
7	60	~~149~~ 149.04	.62	.68	284	246	264	51	44	99	95	1.5	5
	65	152.53	.63	.68	283	245	264	50	45	99	96	1.5	5
8	70	156.02	.63	.69	283	245	264	50	44	99	96	1.5	5
	75	159.45	.63	.69	282	245	264	50	45	98	96	1.5	5
9	80	162.96	.65	.70	282	245	264	50	45	99	96	1.5	5
	85	166.44	.64	.69	283	245	264	51	43	99	96	1.5	5
10	90	169.93	.63	.69	283	245	264	51	40	100	96	1.5	5
	95	173.37	.65	.70	282	244	264	52	40	100	96	1.5	5
11	100	176.83	.50	.61	282	244	264	52	40	100	96	1.1	4.5

Traverse: 1				
Start Time: 1045	Initial Leak Check: .001	cfm@	17	"Hg
Finish Time:	Final Leak Check:	cfm@		"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22085

Operator :

Field Data Sheet

Date: DEC 1/21	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	179.91	.50	.61	282	243	264	53	40	100	96	1.1	4.5
12	110	182.91	.49	.61	282	243	264	53	40	100	96	1.1	4.5
	115	185.90	.51	.62	282	243	264	53	40	100	96	1.2	4.5
	120	189.00											

Traverse: 1			
Start Time:	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 1245	Final Leak Check: .002	cfm@ 15.5	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22085

Operator : RJ

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Semi-Volatile Organic Compounds
Test Date	DECEMBER 1 2021
Test Location	APC Outlet No. 1
Operator	RV

Project No.:	22085
Page	1 of 5
Probe No.:	
Meter Box No.:	
Impinger Box No.:	

Pitot Factor	~~0.842~~ 0.844	
DGMCF	1.000	
Barometric Pressure	29.72	"Hg
Static Pressure	-11.7	"H2O
Nozzle Size	.2520	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	681.5	g
WCBDA	19.0	g

Combustion Gas Concentration

Oxygen	8.48	%
Carbon Dioxide	10.88	%
Carbon Monoxide	12.2	ppm

Measuring Device	MII Numbers
Probe / Pitot	~~SP4~~ SP2
Trendicator	
Control Box	SEE
Incline Manometer	TEST
Comb.Gas.Analyzer	1
Micromanometer	
Barometer	
Calipers	

Reading Interval	5
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements		
1	.2525	.2520
2	.2520	.2510
3	.2520	.2530
4	.2525	.2520
Average:	.2523	

.2520

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: Dec 1/21	Plant: Covanta DYEC	Test No.: SVOC #2	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	78.55	.92	.83	284	.44	256	92	44	101	100	2	6.5
	5	82.43	.91	.82	282	244	257	64	43	99	98	2	6.5
2	10	86.31	.93	.83	283	245	258	59	44	98	96	2	7
	15	90.22	.93	.83	283	245	259	56	44	98	96	2.1	7
3	20	94.30	.89	.81	283	246	261	56	46	99	96	2.0	7
	25	98.31	.89	.81	283	246	261	56	46	99	98	2.0	7
4	30	102.33	.85	.80	283	246	261	55	45	100	98	2.0	7.5
	35	106.40	.85	.80	285	247	261	55	43	100	98	2.0	7.5
5	40	110.32	.78	.77	285	247	261	55	43	100	96	1.9	7.5
	45	114.24	.78	.77	285	247	261	55	43	100	98	1.9	7.5
6	50	118.20	.72	.74	285	247	262	54	42	101	98	1.8	7.5
	55	122.18	.72	.74	285	247	262	54	42	101	99	1.8	7.5
7	60	125.65	.76	.75	286	247	261	52	42	101	98	1.8	7.0
	65	129.82	.76	.75	286	247	261	52	42	101	98	1.8	7.0
8	70	133.32	.87	.79	286	247	261	52	42	101	98	1.9	7.5
	75	137.19	.91	.78	285	246	262	48	42	102	99	1.9	7.5
9	80	141.07	.78	.77	285	246	262	48	43	102	99	1.8	7.5
	85	144.91	.79	.77	285	247	263	48	43	104	99	1.8	7.5
10	90	148.80	.81	.78	285	247	263	49	44	102	99	1.9	7.5
	95	152.68	.82	.78	285	247	263	49	44	102	99	1.9	7.5
11	100	156.59	.83	.80	286	246	262	46	43	104	99	1.9	7.5

Traverse: 1				Traverse: X			
Start Time: 15:59	Initial Leak Check: .004	cfm@ 15	"Hg	Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg	Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22085

Operator : RB

Field Data Sheet

Date: DEC. 1 (21	Plant: Covanta DYEC	Test No.: #2 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	160.40	.81	.78	286	246	262	47	43	102	99	1.9	7.5
12	110	164.27	.78	.77	286	246	261	48	43	102	99	1.9	7.5
	115	168.11	.78	.77	286	246	261	48	43	102	99	1.9	7.5
	120	172.04											

Traverse: 1				
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 19:59	Final Leak Check: .003	cfm@ 21	"Hg

Traverse: X				
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 22085

Operator : CB

Field Data Sheet

Date: DEC. 1 /21	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	172.53	0.94	0.84	285	245	258	54	44	101	100	2.1	8
	5	176.57	0.94	0.84	285	245	257	51	45	100	99	2.1	8
2	10	180.67	0.96	0.85	286	246	254	53	47	100	98	2.1	8.5
	15	184.73	0.95	0.85	286	246	254	53	46	100	99	2.1	8.5
3	20	188.82	0.90	0.82	286	246	255	53	47	100	99	2.1	8.5
	25	192.88	0.88	0.81	286	247	250	54	47	100	99	2.0	8.5
4	30	196.90	0.74	0.77	286	248	255	54	47	100	99	1.8	8.5
	35	200.76	0.80	0.78	286	247	252	55	45	100	99	1.8	9
5	40	204.60	0.72	0.74	286	246	251	55	46	101	99	1.6	8
	45	208.29	0.70	0.73	286	246	251	56	47	100	99	1.6	8
6	50	211.90	0.69	0.72	286	246	252	56	48	101	99	1.5	7
	55	215.34	0.61	0.68	286	246	251	55	45	101	99	1.3	7
7	60	218.62	0.69	0.72	286	245	256	56	44	101	99	1.6	7
	65	222.11	0.70	0.73	286	246	256	54	45	102	99	1.6	7
8	70	225.70	0.72	0.74	287	246	257	54	44	102	100	1.6	7.5
	75	229.29	0.74	0.75	287	245	257	54	45	102	100	1.6	7.5
9	80	232.88	0.78	0.77	288	246	257	55	45	102	100	1.8	8.0
	85	236.66	0.73	0.74	287	246	256	54	45	102	100	1.7	8.0
10	90	240.35	0.69	0.72	287	245	255	54	46	102	100	1.6	8.0
	95	243.90	0.71	0.73	287	245	255	54	44	102	100	1.6	8.0
11	100	247.63	0.52	0.63	287	245	256	55	45	101	100	1.1	6.5

Traverse: 2			
Start Time: 6:08	Initial Leak Check: <0.001	cfm@ 22	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse: X			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22085

Operator: CE / RM

Field Data Sheet

Date: DEC. 1 /21	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp		Meter Temp		Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
								Outlet °F	Inlet/Trap °F	Outlet °F	Inlet °F		
	105	250.75	0.50	0.61	287	245	256	56	44	101	100	1.1	6
12	110	253.78	0.45	0.58	287	245	256	57	43	101	100	0.92	5.5
	115	256.56	0.46	0.59	287	245	256	58	43	102	100	0.94	6
	120	259.37											

Traverse: 2		
Start Time:	Initial Leak Check: ~~cfm@~~	"Hg
Finish Time: 8:07 pm	Final Leak Check: <0.001 cfm@ 13	"Hg

Traverse:		
Start Time:	Initial Leak Check:	cfm @ "Hg
Finish Time:	Final Leak Check:	cfm @ "Hg

Project No.: 22085

Operator :

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Semi-Volatile Organic Compounds
Test Date	Dec 2, 2021
Test Location	APC Outlet No. 1
Operator	BM

Project No.:	22085
Page	1 of 5
Probe No.:	
Meter Box No.:	
Impinger Box No.:	

Pitot Factor	0.846	
DGMCF	1.000	
Barometric Pressure	~~-10.200~~ 29.16	"Hg
Static Pressure	-10.200	"H2O
Nozzle Size	0.2511	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	600.2	g
WCBDA	17.2	g

Combustion Gas Concentration

Oxygen	8.33	%
Carbon Dioxide	10.85	%
Carbon Monoxide	9.2	ppm

Measuring Device	MII Numbers
Probe / Pitot	
Trendicator	COE20094
Control Box	"
Incline Manometer	"
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	
2	
3	
4	
Average:	

Probe Liner Glass / Metal /Teflon / Other_____

Nozzle Glass / Metal / Other_____

Union None /Metal / Teflon / Other_____

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Dec 2, 2021	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	59.86	0.83	0.74	280	244	238	65	62	68	67	1.6	7.5
	5	63.20	0.85	0.75	280	242	248	58	61	67	66	1.8	7.5
2	10	66.96	0.85	0.75	281	242	250	55	39	67	66	1.8	7.0
	15	70.68	0.84	0.75	281	243	253	54	39	67	67	1.8	7.0
3	20	74.36	0.77	0.72	280	242	254	52	38	68	67	1.6	6.5
	25	77.88	0.78	0.72	280	242	254	51	37	68	67	1.7	7.0
4	30	81.53	0.71	0.69	280	243	254	50	38	69	67	1.4	7.0
	35	85.03	0.71	0.69	280	243	256	50	38	70	67	1.4	6.0
5	40	88.39	0.68	0.68	280	243	256	50	38	70	67	1.4	6.0
	45	91.56	0.69	0.68	279	242	256	50	37	70	68	1.5	6.0
6	50	94.94	0.62	0.65	280	244	256	50	37	71	68	1.2	5.5
	55	98.05	0.66	0.67	281	242	256	49	37	71	68	1.3	6.0
7	60	101.21	0.76	0.72	281	242	257	51	36	71	68	1.6	6.5
	65	104.70	0.74	0.71	283	242	256	49	38	71	68	1.6	6.5
8	70	108.21	0.73	0.70	283	241	256	49	38	71	68	1.6	6.5
	75	111.72	0.75	0.71	283	242	256	50	38	71	69	1.6	6.5
9	80	115.20	0.75	0.71	283	242	256	50	37	71	68	1.6	6.5
	85	118.72	0.75	0.71	282	241	256	50	37	70	68	1.6	7.0
10	90	122.25	0.79	0.73	283	241	256	51	37	71	68	1.6	7.0
	95	125.78	.71	.72	283	241	256	50	37	71	68	1.6	7.0
11	100	129.32	0.66	0.67	283	241	256	50	37	71	68	1.3	6.0

Traverse:		
Start Time: 8:21	Initial Leak Check: <0.001 cfm@ 15	"Hg
Finish Time:	Final Leak Check: cfm@	"Hg

Traverse:		
Start Time:	Initial Leak Check: cfm @	"Hg
Finish Time:	Final Leak Check: cfm @	"Hg

Project No.: 22085

Operator : Bm

Field Data Sheet

Date:	Plant: Covanta DYEC	Test No.: SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No._____	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	132.55	0.65	0.66	283	241	256	50	36	70	68	1.3	6.0
12	110	135.76	0.64	0.66	283	240	256	50	36	70	68	1.3	6.0
	115	138.84	0.71	0.69	283	240	256	49	36	71	69	1.4	6.0
	120	142.10											

Traverse: 1			
~~Start Time:~~	Initial Leak Check:	cfm@	"Hg
Finish Time: 10:21	Final Leak Check: <0.001	cfm@ 16	"Hg

~~Traverse:~~			
Start Time:	~~Initial Leak Check:~~	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22085

Operator : BM

Field Data Sheet

Date: Dec 2, 2021	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	142.45	0.68	0.68	280	240	287	53	37	70	69	1.4	6.0
	5	145.72	0.84	0.77	283	239	256	52	39	69	68	1.8	7.0
2	10	149.41	0.90	0.78	283	240	256	52	39	69	68	1.9	7.0
	15	153.22	0.91	0.78	283	240	255	52	40	69	68	1.9	7.0
3	20	157.05	0.87	0.76	284	242	256	54	40	70	68	1.8	8.0
	25	160.81	0.83	0.75	284	241	255	56	40	70	68	1.7	8.0
4	30	164.48	0.86	0.76	284	241	255	54	40	69	68	1.8	8.0
	35	168.19	0.85	0.75	285	242	256	56	41	70	68	1.8	8.0
5	40	171.87	0.72	0.69	286	241	253	54	41	70	68	1.5	7.0
	45	175.29	0.74	0.70	286	241	254	51	39	70	68	1.5	7.0
6	50	178.70	0.66	0.67	285	241	255	50	40	70	69	1.3	7.0
	55	181.96	0.63	0.65	285	241	254	49	39	70	69	1.3	6.5
7	60	185.19	0.67	0.67	284	241	254	48	39	71	69	1.4	6.5
	65	188.41	0.69	0.68	284	241	255	48	39	71	69	1.4	6.5
8	70	191.67	0.65	0.66	284	241	255	48	39	72	69	1.4	6.5
	75	194.94	0.67	0.67	283	241	255	48	40	72	69	1.4	6.5
9	80	198.21	0.68	0.68	282	241	256	48	41	72	69	1.4	6.5
	85	201.50	0.69	0.68	282	241	254	48	39	72	69	1.5	6.5
10	90	204.86	0.70	0.69	282	240	255	48	37	72	69	1.5	7.0
	95	208.23	.70	.69	281	241	253	48	37	72	69	1.5	7
11	100	211.57	0.61	0.64	281	241	255	48	37	72	69	1.3	7

Traverse: 2			
Start Time: 10:30	Initial Leak Check: <0.001	cfm@ 16	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22085

Operator: DM

Field Data Sheet

Date: Dec 2, 2021	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	214.78	0.57	0.62	281	240	255	48	37	72	70	1.2	6.0
12	110	217.81	0.55	0.61	281	240	255	50	37	70	70	1.1	6.0
	115	220.78	0.64	0.66	281	240	256	50	37	72	70	1.3	6.5
	120	223.95											

Traverse: Z			
~~Start Time:~~	Initial Leak Check:	cfm@	"Hg
Finish Time: 12:30	Final Leak Check: < 0.001	cfm@ 15	"Hg

Traverse:			
~~Start Time:~~	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22085

Operator : Bm

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	Semi-Volatile Organic Compounds
Test Date	December 9 2021
Test Location	APC Outlet No. 2
Operator	TT / CB

Project No.:	22085
Page	1 of 5
Probe No.:	6C
Meter Box No.:	Team 4
Impinger Box No.:	—

Pitot Factor	.844	
DGMCF	1.026	
Barometric Pressure	29.93	"Hg
Static Pressure	-9.9	"H2O
Nozzle Size	.2505	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	2
Number of Points/Port	12

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? Yes No

Particulate Gain

Filter	mg
Probe	mg

Moisture Gain

CWTR	641.1	g
WCBDA	14.7	g

Combustion Gas Concentration

Oxygen	8.95	%
Carbon Dioxide	10.83	%
Carbon Monoxide	8.8	ppm

Site Diagram

Measuring Device	MII Numbers
SP2	
Probe / Pitot ~~S-Type~~	B04009
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	B03936
Barometer	Env. Canada
Calipers	CAN 22136

Nozzle Measurements	
1	.2510
2	.2500
3	.2510
4	.2500
Average:	.2505

Notes:

Field Data Sheet

Date: Dec. 9 2024	Plant: Covanta DYEC	Test No.: SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	6.66	1.1	.84	285	254	249	62	43	69	71	2.5	9
	5	10.90	1.1	.83	287	256	254	49	45	70	74	2.45	9.5
2	10	15.21	1.1	.83	288	255	253	48	44	70	76	2.35	9.5
	15	19.44	1.1	.83	288	255	252	48	45	71	77	2.3	9.5
3	20	23.63	.95	.77	288	256	248	49	44	71	78	2.0	9
	25	27.54	.91	.76	288	256	257	49	44	72	79	1.9	9
4	30	31.31	.84	.73	287	256	251	49	43	72	80	1.8	8.5
	35	35.01	.80	.71	286	256	252	50	45	73	81	1.75	8
5	40	38.62	.74	.69	286	256	248	50	44	73	81	1.6	8
	45	42.04	.76	.70	286	256	246	50	44	74	82	1.7	8
6	50	45.54	.70	.67	287	256	253	50	45	74	82	1.5	7.5
	55	48.84	.70	.67	287	255	254	50	43	74	82	1.5	7.5
7	60	52.12	.70	.67	287	255	246	50	43	74	82	1.6	8
	65	55.50	.73	.68	287	256	250	50	43	74	82	1.6	8
8	70	58.89	.73	.65	287	255	254	50	43	74	82	1.6	8
	75	62.30	.75	.69	287	255	248	50	43	74	82	1.65	8
9	80	65.78	.82	.72	287	255	249	50	45	74	82	1.8	9
	85	69.46	.82	.72	287	256	249	50	45	74	82	1.8	9
10	90	73.15	.83	.73	286	255	251	50	45	74	82	1.8	9
	95	76.84	.76	.70	287	255	249	50	45	74	82	1.65	9
11	100	80.37	.68	.66	286	255	247	50	45	75	82	1.5	8.5

Traverse:		Traverse:	
Start Time: 9:37	Initial Leak Check: .002 cfm@ 17" "Hg	Start Time:	Initial Leak Check: cfm @ "Hg
Finish Time:	Final Leak Check: cfm@ "Hg	Finish Time:	Final Leak Check: cfm @ "Hg

Project No.: 22085

Operator : [illegible] / CB.

Field Data Sheet

Date: Dec. 9 2024	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	83.77	.70	.67	285	254	248	50	44	75	82	1.5	8.5
12	110	87.13	.52	.58	285	254	248	51	44	75	83	1.1	8
	115	90.05	.52	.58	285	254	254	51	43	75	83	1.1	8
	120	92.96											

Traverse: 1				
Start Time: –	Initial Leak Check: –	cfm@ –	"Hg
Finish Time: 11:37	Final Leak Check: .001	cfm@ 16	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22085

Operator : TT/CB

Field Data Sheet

Date: Dec. 9 2021	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	93.32	.89	.75	287	254	250	60	43	74	79	1.9	9.5
	5	97.04	.90	.76	287	254	254	50	43	74	80	1.9	9.5
2	10	100.84	.92	.77	287	255	252	47	44	74	81	2.0	9.5
	15	104.70	.94	.78	287	255	247	47	44	75	81	2.05	10
3	20	108.63	.91	.76	287	256	248	46	45	75	82	1.95	10
	25	112.48	.94	.78	287	256	249	47	44	75	82	2.05	10
4	30	116.39	.87	.75	288	256	249	47	46	75	82	1.8	9
	35	120.11	.85	.74	288	256	249	48	45	75	82	1.8	9
5	40	123.86	.76	.70	288	256	250	48	45	75	83	1.6	8.5
	45	127.28	.75	.70	288	256	254	48	44	76	83	1.6	8.5
6	50	130.77	.66	.65	287	256	250	49	45	76	83	1.45	8.5
	55	134.06	.67	.66	286	256	251	49	44	76	84	1.45	8.5
7	60	137.35	.73	.69	287	256	250	49	45	76	84	1.6	9
	65	140.75	.76	.70	287	256	250	49	45	76	84	1.7	9
8	70	144.28	.75	.70	288	256	250	50	45	77	84	1.65	9
	75	147.88	.75	.70	287	256	252	49	45	77	84	1.65	9
9	80	151.30	.74	.69	287	256	249	50	45	77	84	1.65	9
	85	154.82	.70	.67	287	255	249	50	45	77	84	1.55	9
10	90	158.28	.73	.69	286	255	250	50	45	77	85	1.65	9
	95	161.82	.75	.70	285	255	251	50	45	77	85	1.65	9
11	100	165.36	.74	.69	285	255	251	50	44	77	85	1.65	9

Traverse: 2					
Start Time: 11:45	Initial Leak Check: .001	cfm@	16	"Hg
Finish Time: —	Final Leak Check: —	cfm@	—	"Hg

Traverse:					
Start Time: /	Initial Leak Check: /	cfm @	/	"Hg
Finish Time: /	Final Leak Check: /	cfm @	/	"Hg

Project No.: 22085

Operator: TT/CB

Field Data Sheet

Date: DEC. 9/21	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	168.87	.74	.69	285	255	250	50	43	77	85	1.65	9
12	110	172.38	.64	.64	285	255	253	50	43	77	85	1.4	9
	115	175.68	.66	.65	285	255	252	51	42	78	85	1.45	9
	120	179.05											

Traverse: 2				
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 13:45	Final Leak Check: .002	cfm@ 17	"Hg

Traverse:				
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 22085

Operator: TT / CB

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Semi-Volatile Organic Compounds
Test Date	December 9 2021
Test Location	APC Outlet No. 2
Operator	TT / CB

Project No.:	22085
Page	1 of 5
Probe No.:	6C
Meter Box No.:	TEAM 4
Impinger Box No.:	

Pitot Factor	.844	
DGMCF	1.026	
Barometric Pressure	29.86	"Hg
Static Pressure	-.9	"H2O
Nozzle Size	.2505	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	628.5	g
WCBDA	17.6	g

Combustion Gas Concentration

Oxygen	8.83	%
Carbon Dioxide	10.83	%
Carbon Monoxide	11.5	ppm

Measuring Device	MII Numbers
Probe / Pitot	
Trendicator	
Control Box	SEE
Incline Manometer	TEST
Comb.Gas.Analyzer	#1
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	SEE
2	TEST
3	#1
4	
Average:	

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: Dec. 9 2021	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	80.32	1.05	.82	288	252	246	73	47	75	77	9	9.5
	5	84.38	1.05	.82	288	255	254	59	49	75	79	2.2	11
2	10	88.50	1.05	.82	289	254	254	55	49	75	81	2.2	11
	15	92.63	1.05	.82	289	255	247	53	50	76	82	2.2	11
3	20	96.77	.95	.78	289	256	255	52	50	76	82	2.05	10
	25	100.73	1.05	.82	289	256	255	51	49	76	83	2.2	11
4	30	104.87	.93	.77	290	256	249	51	49	77	83	2.0	10
	35	108.80	.90	.76	290	256	260	51	49	77	84	1.95	10
5	40	112.62	.83	.73	290	256	248	51	49	77	84	1.8	9.5
	45	116.32	.79	.71	291	256	254	52	49	78	85	1.75	9.5
6	50	119.96	.67	.66	290	256	258	52	50	78	85	1.5	9
	55	123.33	.72	.68	290	256	247	52	49	78	85	1.6	9
7	60	126.82	.75	.70	290	256	255	52	50	78	86	1.65	9
	65	130.34	.75	.70	290	255	254	52	49	78	86	1.65	9
8	70	133.85	.87	.75	290	255	247	52	51	79	86	1.9	10
	75	137.63	.86	.75	290	256	254	52	50	79	86	1.9	10
9	80	141.45	.84	.74	290	255	258	51	48	79	86	1.9	10
	85	145.25	.86	.75	290	255	249	50	45	79	86	1.9	10
10	90	149.08	.83	.74	289	255	252	50	45	79	86	1.8	10
	95	152.81	.85	.75	289	255	258	50	47	79	86	1.9	10
11	100	156.61	.65	.66	281	255	253	50	46	79	86	1.5	9

Traverse: 1				
Start Time: 14:31	Initial Leak Check: .002	cfm@ 17	"Hg
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg

Traverse:				
Start Time: /	Initial Leak Check: /	cfm @ /	"Hg
Finish Time: /	Final Leak Check: /	cfm @ /	"Hg

Project No.: 22085

Operator: TT / CB

Field Data Sheet

Date: Dec. 9 2014	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	159.99	.55	.60	285	255	249	51	46	79	86	1.2	8
12	110	162.98	.58	.62	284	254	257	52	44	79	87	1.3	8.5
	115	166.11	.58	.62	284	254	255	51	45	79	87	1.3	8.5
	120	169.28											

Traverse:	1					
Start Time:	—	Initial Leak Check:	—	cfm@	—	"Hg
Finish Time:	16:31	Final Leak Check:	.004	cfm@	16	"Hg

Traverse:					
Start Time:		Initial Leak Check:		cfm @	"Hg
Finish Time:		Final Leak Check:		cfm @	"Hg

Project No.: 22085

Operator :

Field Data Sheet

Date: DEC. 9/21	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	169.65	.90	.77	287	254	253	67	45	78	87	1.9	10
	5	173.35	.90	.77	286	254	254	53	44	79	87	1.9	10
2	10	177.15	.90	.77	286	255	248	52	46	78	84	1.9	10
	15	180.92	.90	.77	286	255	259	52	44	78	84	1.9	10
3	20	184.73	.88	.76	286	255	249	52	46	78	84	1.9	10
	25	188.48	.88	.76	285	256	251	53	44	78	84	1.9	10
4	30	192.31	.82	.74	285	256	254	51	45	78	84	1.8	10
	35	196.07	.84	.74	285	255	252	50	44	78	84	1.8	10
5	40	199.76	.73	.70	285	255	248	49	44	78	85	1.7	10
	45	203.34	.76	.71	285	256	251	49	43	78	85	1.7	10
6	50	206.91	.66	.66	285	256	254	49	44	78	86	1.5	9.5
	55	210.30	.66	.66	285	255	251	49	43	78	86	1.5	9.5
7	60	213.71	.76	.71	286	255	252	50	44	78	86	1.7	9.5
	65	217.30	.76	.71	286	255	250	50	44	78	86	1.7	9.5
8	70	220.90	.74	.70	286	255	250	50	45	79	86	1.6	9.5
	75	224.40	.76	.71	286	255	249	50	44	79	86	1.6	9.5
9	80	227.87	.77	.72	286	255	252	51	44	79	87	1.65	9.5
	85	231.45	.77	.72	286	255	252	51	44	79	87	1.65	9.5
10	90	234.97	.81	.73	286	255	252	51	44	79	87	1.8	10
	95	238.64	.81	.73	286	255	250	51	45	79	87	1.8	10
11	100	242.30	.75	.71	287	255	250	51	45	79	87	1.65	10

Traverse: 2					Traverse:				
Start Time: 16:41	Initial Leak Check:	.001	cfm@	16 "Hg	Start Time:		Initial Leak Check:		cfm @ "Hg
Finish Time: —	Final Leak Check:	—	cfm@	— "Hg	Finish Time:		Final Leak Check:		cfm @ "Hg

Project No.: 22085

Operator : CB

Field Data Sheet

Date: DEC. 9 /21	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp		Meter Temp		Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
								Outlet °F	Inlet/Trap °F	Outlet °F	Inlet °F		
	105	245.83	.75	.71	287	255	251	51	45	79	86	1.65	10
12	110	249.37	.63	.65	287	254	251	51	46	79	87	1.5	9.5
	115	252.72	.60	.63	287	255	249	52	46	79	86	1.35	9.5
	120	256.05											

Traverse: 2			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 18:41	Final Leak Check: .002	cfm@ 17	"Hg

Traverse: X			
Start Time: X	Initial Leak Check: X	cfm @	"Hg
Finish Time:	Final Leak Check: X	cfm @	"Hg

Project No.: 22085

Operator : CB

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Semi-Volatile Organic Compounds
Test Date	DECEMBER 10, 2021
Test Location	APC Outlet No. 2
Operator	JG.

Project No.:	22085
Page	1 of 5
Probe No.:	GC
Meter Box No.:	TEAM 44
Impinger Box No.:	17

Pitot Factor	0.844	
DGMCF	1.026	
Barometric Pressure	29.68	"Hg
Static Pressure	~~0~~ -9.9	"H2O
Nozzle Size	~~0~~ 0.2505	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	2
Number of Points/Port	12

Probe Liner (Glass) / Metal / Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None / Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Particulate Gain

Filter	mg
Probe	mg

Moisture Gain

CWTR	654.7	g
WCBDA	18.2	g

Combustion Gas Concentration

Oxygen	8.78	%
Carbon Dioxide	10.83	%
Carbon Monoxide	8.1	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	
Incline Manometer	TEST
Comb.Gas.Analyzer	
Micromanometer	
Barometer	1
Calipers	

Nozzle Measurements	
1	SEE
2	
3	TEST
4	
Average:	1

Site Diagram

Notes:

Field Data Sheet

Date: Dec 10, 2021	Plant: Covanta DYEC	Test No.: SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H₂O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H₂O *	Pump Vacuum "Hg Gauge *
1	0	56.80	1.0	.82	286	254	257	68	43	82	84.	2.1	8.0
	5	60.79	1.0	.82	287	256	255	49	44	82	87.	2.3	8.0
2	10	64.97	1.1	.86	288	256	251	46	45	83	89	2.4	8.0
	15	69.24	1.1	.86	289	257	257	46	45	83.	91	2.5	8.0.
3	20	73.70	0.95	.80	288	257	255	46	45	84	92	2.2	8.0
	25	77.81	0.95	.80	288	257	252	47	44	85	93.	2.1	8.0.
4	30	81.85	0.85	.76	287.	257	258	47	43	85	93	1.9	8.0.
	35	85.68	0.85	.76	288	257	254	48	43	85	94.	1.9	8.0.
5	40	89.47	.76	.72	287	257	254	48	44	86	95	1.6	7.0.
	45	92.97	.75	.72	286	257	258	49	43	87	96.	1.7	7.0.
6	50	96.62	.66	.67	285	256	253	49	44	87	97	1.3	7.0.
	55	99.92	.66	.67	284	256	254	50	43	88	97.	1.9	7.0
7	60	103.25	.75	.72	284.	256	259	49	44	88	98	1.9	7.0
	65	107.07	.73	.71	284	256	258	47	43	88	98	1.7	7.0.
8	70	110.70	.75	.72	284	257	255	47	43	89	99	1.8	7.0
	75	114.47	.80	.75	284	256	260	46	43	90	99	1.8	7.0
9	80	118.22	.77	.73	285	256	253	46	43	90	100	1.7	7.0
121.84	85	* ~~121.12~~ *	.80	.75	285	256	259	46	43	91	100	1.8	8.0
10	90	125.75	.80	.75	285	256	258	46	43	91	101	1.8	8.0
	95	129.38	.80	.75	285	256	255	47	43	92	101.	1.9	8.0.
11	100	133.23.	.67	.68	285	256	259	47	43	92	101	1.5	8.0

Traverse: 1				Traverse: –			
Start Time: 0833.	Initial Leak Check: .002 cfm@ 18 "Hg			Start Time: –	Initial Leak Check: – cfm @ – "Hg		
Finish Time: –	Final Leak Check: – cfm@ – "Hg			Finish Time: –	Final Leak Check: – cfm @ – "Hg		

* TOOK READING AT WRONG TIME

Project No.: 22085

Operator : [signature]

Field Data Sheet

Date: Dec 10, 2021	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	136.73	0.70	0.70	284	256	255	46	42	92	101	1.5	8.0
12	110	140.18	0.67	0.69	283	256	256	48	42	92	102	1.5	8.0
	115	143.63	0.68	0.55	283	256	260	48	42	93	102	0.99	8.0
	120	146.44											

Traverse: 1		Traverse: —	
Start Time: —	Initial Leak Check: — cfm@ — "Hg	Start Time: —	Initial Leak Check: — cfm @ — "Hg
Finish Time: 1033	Final Leak Check: <.001 cfm@ 17 "Hg	Finish Time: —	Final Leak Check: — cfm @ — "Hg

Project No.: 22085

Operator :

Field Data Sheet

Date: Dec 19 2021	Plant: Covanta DYEC	Test No.: 3	SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	146.89	.95	.81	285	256	258	62	45	93	98	2.1	9.0
	5	150.95	.99	.83	287	255	259	48	49	93	100	2.2	9.0
2	10	155.16	.99	.83	287	256	254	46	50	93	101	2.2	10
	15	159.40	.99	.83	288	256	260	46	49	93	101	2.2	10
3	20	163.65	.91	.80	288	257	255	46	49	93	101	2.0	10
	25	167.65	.95	.82	288	257	255	47	48	94	102	2.1	10
4	30	171.76	0.95	.82	289	257	260	47	47	94	102	2.1	10
	35	175.87	0.85	.77	289	257	260	47	48	94	102	1.8	10
5	40	179.80	.80	.75	290	257	258	48	47	94	103	1.8	10
	45	183.62	.80	.75	290	257	259	48	46	94	103	1.8	10
6	50	187.42	.68	.69	290	257	253	49	44	95	103	1.5	9.0
	55	190.95	.68	.69	290	256	259	49	44	95	103	1.5	9.0
7	60	194.47	.72	.71	290	256	257	49	45	95	104	1.7	9.0
	65	198.12	.70	.70	290	257	256	50	45	95	104	1.6	9.0
8	70	201.72	.70	.70	289	256	261	50	46	95	104	1.6	9.0
	75	205.35	.72	.71	289	256	254	50	46	95	104	1.6	9.0
9	80	208.91	.75	.74	288	256	257	50	46	96	104	1.8	9.0
	85	212.70	.75	.73	287	256	257	50	46	96	104	1.6	9.0
10	90	216.37	.70	.70	287	256	256	51	45	96	104	1.6	9.0
	95	219.87	.70	.70	287	256	262	51	46	96	104	1.6	9.0
11	100	223.43	.68	.69	286	256	253	51	45	96	105	1.6	9.0

Traverse: –		Traverse: 2 ~~1039~~	
Start Time: –	Initial Leak Check: – cfm@ – "Hg	Start Time: 1039	Initial Leak Check: <.001 cfm @ 17 "Hg
Finish Time: –	Final Leak Check: – cfm@ – "Hg	Finish Time: –	Final Leak Check: – cfm @ – "Hg

Project No.: 22085

Operator : [signature]

Field Data Sheet

Date: Dec 10, 2021	Plant: Covanta DYEC	Test No.: 5 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	105	226.99	0.7	.70	287	256	260	52	46	96	105	1.6	9.0
12	110	230.52	0.68	0.69	287	255	259	52	47	96	105	1.6	9.0
	115	234.05	0.68	0.69	287	256	256	52	47	96	105	1.6	9.0
	120	237.59											

Traverse: –			
Start Time: –	Initial Leak Check: – cfm@ – "Hg		
Finish Time: –	Final Leak Check: – cfm@ – "Hg		

Traverse: 2			
Start Time: –	Initial Leak Check: – cfm @ – "Hg		
Finish Time: 1239	Final Leak Check: <.001 cfm @ 15 "Hg		

Project No.: 22085

Operator : [signature]

APPENDIX 7

Acid Gas Field Data Sheets
(12 pages)

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	M26A
Test Date	Nov 29, 2021
Test Location	APC Outlet No. 1
Operator	RM

Project No.:	22085
Page	1 of 2
Probe No.:	6A
Meter Box No.:	TEAM 3
Impinger Box No.:	8

Pitot Factor	0.842	
DGMCF	0.996	
Barometric Pressure	~~29.64~~ 29.75	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	0.2510	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	1
Number of Points/Port	1

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	136.5	g
WCBDA	11.6	g

Combustion Gas Concentration

Oxygen	8.90	%
Carbon Dioxide	10.69	%
Carbon Monoxide	5.6	ppm

Measuring Device	MII Numbers
Probe / Pitot 3P4	B04011
Trendicator	COE 20093
Control Box	"
Incline Manometer	"
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	CAN 22136

Nozzle Measurements	
1	.2510
2	.2510
3	.2510
4	.2510
Average:	

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Nov 29, 2024	Plant: Covanta DYEC	Test No.: 1 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	M26A Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
4 ~~1~~	0	94.72	0.75	0.73	278	256	256	68	124	83	84	1.9	3.0
	5	98.39	0.72	0.71	285	251	256	62	134	~~83~~	84	1.8	3.0
	10	101.89	0.71	0.71	285	248	257	60	143	83	85	1.8	3.0
	15	105.27	0.72	0.71	285	246	254	59	150	83	87	~~1.~~ 1.9	3.0
	20	108.90	0.73	0.72	254	246	256	59	156	84	89	1.9	3.0
	25	112.34	0.73	0.72	285	256	256	59	160	85	91	~~1.9~~ 2.0	3.0
	30	115.97	0.71	0.71	284	261	255	60	163	85	92	2.0	3.0
	35	119.61	0.71	0.71	284	258	256	61	166	86	93	2.0	3.0
	40	123.24	0.71	0.72	284	254	254	56	167	87	94	2.0	3.0
	45	126.88	0.72	0.72	284	246	255	55	169	87	95	2.0	3.0
	50	130.53	0.71	0.72	284	248	255	53	170	88	95	2.0	3.0
	55	134.16	0.72	0.72	284	259	254	53	172	88	96	2.0	3.0
	60	137.78											

Traverse:					
Start Time: 10:31	Initial Leak Check:	< 0.001	cfm@	16	"Hg
Finish Time: 11:31	Final Leak Check:	< 0.001	cfm@	15	"Hg

Project No.: 22085

Operator : BM

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	M26A
Test Date	Nov. 29, 2021
Test Location	APC Outlet No. 1
Operator	BM

Project No.:	22085
Page	1 of 2
Probe No.:	6A
Meter Box No.:	TEAM 3
Impinger Box No.:	8

Pitot Factor	0.842	
DGMCF	0.996	
Barometric Pressure	29.72	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	0.2510	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	1
Number of Points/Port	1

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	147.5	g
WCBDA	9.0	g

Combustion Gas Concentration

Oxygen	8.66	%
Carbon Dioxide	10.89	%
Carbon Monoxide	8.0	ppm

Measuring Device	MII Numbers
Probe / Pitot SP4	B04011
Trendicator	COE20093
Control Box	"
Incline Manometer	"
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	CAN 22/36

Nozzle Measurements	
1	0.2510
2	0.2510
3	0.2510
4	0.2510
Average:	

Probe Liner Glass / Metal /Teflon / Other_____

Nozzle Glass / Metal / Other_____

Union None /Metal / Teflon / Other_____

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Nov 29, 2021	Plant: Covanta DYEC	Test No.: 2 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	M26A Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	38.41	0.71	~~0.72~~	~~261~~ 277	~~261~~ 255 ~~26~~	~~258~~	71	132	89	89	2.0	3.0
	5	42.08	0.71	0.72	286	247	256	59	150	~~60~~ 589	89	2.0	3.0
	10	45.72	0.70	0.71	286	247	257	57	160	89	91	2.0	3.0
	15	49.32	0.69	0.71	286	256	254	57	165	89	93	2.0	3.0
	20	52.93	0.66	0.69	286	261	257	58	168	89	95	~~2.0~~ 1.9	3.0
	25	56.51	0.69	0.71	286	253	254	58	169	90	96	1.8	3.0
	30	60.08	0.69	0.71	287	250	253	59	170	90	97	1.8	3.0
	35	63.44	0.71	0.72	287	247	255	60	171	91	97	1.9	3.0
	40	67.01	0.70	0.71	288	257	255	61	172	91	98	1.9	3.0
	45	70.56	0.69	0.71	288	260	255	56	172	92	99	1.9	3.0
	50	74.12	0.67	0.70	287	254	253	55	172	92	99	1.9	3.0
	55	77.71	0.67	0.70	288	246	255	55	173	92	99	1.9	3.0
	60	81.28											

Traverse:				
Start Time: 12:17	Initial Leak Check:	<0.005	cfm@ 16	"Hg
Finish Time: 1:17	Final Leak Check:	<0.001	cfm@ 16	"Hg

Project No.: 22085

Operator : BM

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	M26A
Test Date	Nov 29 2021
Test Location	APC Outlet No. 1
Operator	BM

Project No.:	22085
Page	1 of 2
Probe No.:	6A
Meter Box No.:	TEAM 3
Impinger Box No.:	

Pitot Factor	0.842	
DGMCF	0.996	
Barometric Pressure	29.71 ~~29.95~~	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	0.2510	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	1
Number of Points/Port	1

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	168.7	g
WCBDA	7.1	g

Combustion Gas Concentration

Oxygen	8.80	%
Carbon Dioxide	10.56	%
Carbon Monoxide	9.3	ppm

Measuring Device	MII Numbers
Probe / Pitot SP4	BO4011
Trendicator	COE20093
Control Box	11
Incline Manometer	11
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	CAN 22/30

Nozzle Measurements	
1	0.2510
2	0.2510
3	0.2510
4	0.2510
Average:	

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: Nov 29, 2021	Plant: Covanta DYEC	Test No.: 3 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	M26A Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	81.92	0.76	0.74	284	250	257	68	134	91	90	2.1	3.0
	5	85.69	0.77	0.75	288	260	256	55	145	91	90	2.1	3.0
	10	89.39	0.79	0.75	288	259	255	50	159	~~101~~ 90	91	2.1	3.0
	15	93.13	0.78	0.75	288	249	256	50	165	90	93	2.1	3.0
	20	96.88	0.76	0.74	288	246	254	50	168	90	94	2.1	3.0
	25	100.65	0.76	0.74	288	255	255	50	170	91	96	2.1	3.0
	30	104.48	0.76	0.74	288	257	255	51	172	91	97	2.1	3.0
	35	108.12	0.77	0.75	289	248	253	51	173	92	97	2.1	3.0
	40	111.89	0.76	0.74	289	248	254	51	174	92	98	2.1	3.0
	45	115.66	0.77	0.75	289	259	255	52	175	92	99	2.1	3.0
	50	119.42	0.76	0.75	289	253	253	52	175	93	99	2.1	3.0
	55	123.17	0.75	0.74	289	246	253	53	176	93	99	2.1	3.0
	60	126.92											

Traverse:					
Start Time: 2:29 pm	Initial Leak Check:	< 0.001	cfm@	17	"Hg
Finish Time: 3:29 pm	Final Leak Check:	< 0.001	cfm@	17	"Hg

Project No.: 22085

Operator: PKH

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	M26A
Test Date Nov 30, 2021	
Test Location	APC Outlet No. 2
Operator RM	

Project No.:	22085
Page	1 of 2
Probe No.:	6A
Meter Box No.:	TEAM 3
Impinger Box No.:	8

Pitot Factor	0.842	
DGMCF	0.996	
Barometric Pressure	29.60	"Hg
Static Pressure	-9.9	"H2O
Nozzle Size	0.2510	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	1
Number of Points/Port	1

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	1549	g
WCBDA	9.7	g

Combustion Gas Concentration

Oxygen	8.63	%
Carbon Dioxide	10.87	%
Carbon Monoxide	10.5	ppm

Measuring Device	MII Numbers
Probe / Pitot SP4	BO4011
Trendicator	COE20093
Control Box	"
Incline Manometer	"
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	CAN22136

Nozzle Measurements	
1	0.2510
2	0.2510
3	0.2510
4	0.2510
Average:	

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Nov 30, 2021	Plant: Covanta DYEC	Test No.: 1 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	M26A Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	27.56	0.66	0.70	267	254	255	72	116	89	89	1.9	3.0
	5	31.13	0.71	0.72	287	257	254	67	127	89	89	1.9	3.0
	10	34.66	0.71	0.71	288	259	253	60	138	89	90	2.0	3.0
	15	38.27	0.69	0.70	288	254	253	58	145	89	93	2.0	3.0
	20	41.87	0.69	0.71	288	250	253	57	151	90	95	2.0	3.0
	25	45.48	0.70	0.71	288	245	255	57	155	90	96	2.0	3.0
	30	49.08	0.71	0.72	289	248	252	57	159	91	98	2.0	3.0
	35	52.70	0.69	0.71	289	258	253	57	162	92	98	2.0	3.0
	40	56.33	0.71	0.72	289	257	254	57	165	92	99	2.0	3.0
	45	59.97	0.72	0.73	290	252	254	58	168	93	100	2.0	3.0
	50	63.62	0.72	0.73	290	246	252	59	169	94	100	2.0	3.0
	55	67.25	0.72	0.73	290	249	253	60	170	94	101	2.0	3.0
	60	~~190~~ 70.90											

Traverse:				
Start Time: 8:32	Initial Leak Check: ✓	<0.001	cfm@ 17	"Hg
Finish Time: 9:22	Final Leak Check:	<0.001	cfm@ 16	"Hg

Project No.: 22085

Operator: BM

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	M26A
Test Date	Nov 30/2021
Test Location	APC Outlet No. 2
Operator	BM

Project No.:	22085
Page	1 of 2
Probe No.:	6A
Meter Box No.:	TEAM 3
Impinger Box No.:	

Pitot Factor	0.842	
DGMCF	0.996	
Barometric Pressure	29.59	"Hg
Static Pressure	-9.9	"H2O
Nozzle Size	0.2510	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	1
Number of Points/Port	1

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	160.8	g
WCBDA	12.2	g

Combustion Gas Concentration

Oxygen	8.53	%
Carbon Dioxide	11.13	%
Carbon Monoxide	8.1	ppm

Measuring Device	MII Numbers
Probe / Pitot SP4	B04011
Trendicator	CDE 20093
Control Box	〃
Incline Manometer	〃
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	CAV22130

Nozzle Measurements	
1	0.2510
2	0.2510
3	0.2510
4	0.2510
Average:	

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: Nov 30, 2021	Plant: Covanta DYEC	Test No.: 2 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	M26A Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	71.64	0.68	0.71	288	261	256	73	134	94	93	2.0	3.0
	5	74.58	0.72	0.73	289	248	252	65	155	94	94	2.0	3.0
	10	78.23	0.73	0.73	289	254	252	64	161	94	94	2.0	3.0
	15	81.87	0.76	0.74	289	249	254	64	167	94	96	2.0	3.0
	20	85.51	0.74	0.74	289	247	253	64	170	94	98	2.1	3.0
	25	89.25	0.72	0.73	289	258	253	62	173	94	99	2.1	3.0
	30	92.97	0.74	0.74	289	252	253	61	175	94	99	2.0	3.0
	35	96.66	0.74	0.74	289	250	254	62	175	94	100	2.0	3.0
	40	100.33	0.72	0.73	289	247	252	63	176	95	100	2	3.0
	45	103.99	0.71	0.72	289	255	252	62	177	95	101	2.0	3.0
	50	107.66	0.71	0.72	289	257	253	59	177	95	101	2.0	3.0
	55	111.31	0.72	0.73	289	251	252	57	178	95	101	2.0	3.0
	60	114.95											

Traverse:				
Start Time: 10:01	Initial Leak Check: <0.001	cfm@ 17	"Hg	
Finish Time: 11:01	Final Leak Check: <0.001	cfm@ 16	"Hg	

Project No.: 22085

Operator: [signature]

ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	M26A
Test Date Dec 1, 2021	
Test Location	APC Outlet No. 2
Operator BM	

Project No.:	22085
Page	1 of 2
Probe No.:	6A
Meter Box No.:	TEAM 3
Impinger Box No.:	8

Pitot Factor	0.842	
DGMCF	0.996	
Barometric Pressure	29.81	"Hg
Static Pressure	-10.6	"H2O
Nozzle Size	0.2510	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	1
Number of Points/Port	1

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	187.7	g
WCBDA	7.5	g

Combustion Gas Concentration

Oxygen	8.93	%
Carbon Dioxide	10.70	%
Carbon Monoxide	18.8	ppm

Measuring Device	MII Numbers
Probe / Pitot SP4	BOHO11
Trendicator	COE20093
Control Box	"
Incline Manometer	"
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	0.2510
2	0.2510
3	0.2510
4	0.2510
Average:	

Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: Dec 1, 2021	Plant: Covanta DYEC	Test No.: 3 M26A	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	M26A Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/~~Trap~~ °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
4 1	0	27.24	0.75	0.73	283	245	255	72	177	86	88	2.0	3.0
	5	30.87	0.75	0.73	289	250	258	60	218	87	88	2.0	3.0
	10	34.48	0.74	0.73	289	246	253	58	217	87	90	2.0	3.0
	15	38.06	0.77	0.74	289	255	249	59	214	88	92	2.1	3.0
	20	41.76	0.75	0.73	290	257	250	59	148	88	94	2.1	3.0
	25	45.46	0.79	0.75	290	247	251	61	214	89	96	2.2	3.0
	30	49.24	0.76	0.74	290	246	250	59	215	90	97	2.2	3.0
	35	53.03	0.74	0.73	290	259	250	58	215	91	98	2.1	3.0
	40	56.75	0.72	0.72	290	254	280	58	215	92	99	2.1	3.0
	45	60.46	0.70	0.72	289	246	250	58	215	93	100	2.0	3.0
	50	64.09	0.67	0.70	288	252	249	59	214	93	100	1.9	3.0
	55	67.64	0.66	0.70	287	258	249	58	213	94	101	1.9	3.0
	60	71.18											

Traverse:					
Start Time: 8:33	Initial Leak Check: <0.002	cfm@	15	"Hg	
Finish Time: 9:33	Final Leak Check: <0.002	cfm@	16	"Hg	

Project No.: 22085

Operator : DM

APPENDIX 8

VOST Field Data Sheets
(6 pages)

Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organics Sampling Train
Sample Volume Corrections

Test No.	DGMCF	Initial DGM Reading (L)	Final DGM Reading (L)	Actual Vol. Sampled (L)	Barometric Pressure (in Hg)	Average DGM Pressure del H (in H2O)	Average DGM Temperature (°C)	Corrected Volume (L)*	Corrected Volume (Rm3)*
1	0.997	6400.22	6421.50	21.28	29.81	0.50	36.6	20.37	0.0204
2	0.997	22.36	45.00	22.64	29.83	0.50	39.8	21.47	0.0215
3	0.997	45.21	68.50	23.29	29.84	0.50	40.8	22.02	0.0220
4	0.997	69.04	92.50	23.46	29.84	0.50	41.6	22.13	0.0221

* Dry at 25°C and 1 atmosphere

Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organics Sampling Train
Sample Volume Corrections

Test No.	DGMCF	Initial DGM Reading (L)	Final DGM Reading (L)	Actual Vol. Sampled (L)	Barometric Pressure (in Hg)	Average DGM Pressure del H (in H2O)	Average DGM Temperature (°C)	Corrected Volume (L)*	Corrected Volume (Rm3)*
1	1.048	7043.18	7067.15	23.97	29.91	1.00	28.2	24.90	0.0249
2	1.048	7068.80	7093.30	24.50	29.89	1.10	28.8	25.40	0.0254
3	1.048	7093.93	7120.30	26.37	29.89	1.00	29.3	27.28	0.0273
4	1.048	7120.80	7147.85	27.05	29.88	1.00	29.6	27.95	0.0280

* Dry at 25°C and 1 atmosphere

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC			
Plant Location: Courtice, ON	Test Condition:		Control Box ID: Vost #3
Test location: APC Outlet No. 1	DGMCF: 0.997		Operator: JG.
Date: Dec 1, 202,	Barometric Pressure: "Hg		Project No: 22085
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: L2651683-5	

PBAR = 29.81

Test 1 Start Time: 0838	Initial Leak Check NDL @ 15.5 "Hg	Sample ID: L2651683-1A			
Test 1 End Time: 0918	Final Leak Check NDL @ 20.5 "Hg	Lab ID: 1A . 1B ✓			

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	640022	132	138	16	28	0.5	2.0
5	640310	132	139	14	34	0.5	2.0
10	640694	134	138	14	35	0.5	2.0
15	640865	135	138	13	36	0.5	2.0
20	641125	136	138	13	38	0.5	2.0
25	~~6418~~ 41290	136	138	13	38	0.5	2.0
30	641680	136	137	12	39	0.5	2.0
35	641905	136	137	12	40	0.5	2.0
40	642165	137	137	12	41	0.5	2.0

PBAR = 29.83

Test 2 Start Time: 0923	Initial Leak Check NDL @ 20.5 "Hg	Sample ID: 2A -2B			
Test 2 End Time: 1003	Final Leak Check @ "Hg	Lab ID: -2			

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	22.36	136	136	14	38	0.5	2.0
5	25.40	136	136	13	38	0.5	2.0
10	28.14	136	136	12	40	0.5	2.0
15	30.85	137	138	13	40	0.5	2.0
20	33.73	137	136	13	40	0.5	2.0
25	36.40	137	136	13	40	0.5	2.0
30	39.25	137	136	14	41	0.5	2.0
35	44.15	137	136	13	40	0.5	2.0
40	45.00	137	136	13	41	0.5	2.0

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC			
Plant Location: Courtice, ON	Test Condition:		Control Box ID: Box #3
Test location: APC Outlet No. 1	DGMCF: 0.997		Operator: JG.
Date: Dec 1, 2021	Barometric Pressure: "Hg		Project No: 22085
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: L2651683-5	

PBAR = 29.84

Test 3 Start Time: 1009	Initial Leak Check NDL @ 20.5 "Hg	Sample ID: L2651683-3	
Test 3 End Time: 1049	Final Leak Check @ "Hg	Lab ID: 3A. 3B	

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	46.24	136	136	15	39	0.5	2.0
5	48.36	136	137	14	40	0.5	2.0
10	51.20	136	136	14	40	0.5	2.0
15	54.00	137	137	14	41	0.5	2.0
20	57.00	136	136	13	41	0.5	2.0
25	59.82	137	136	14	42	0.5	2.0
30	62.70	137	136	14	41	0.5	2.0
35	65.65	137	136	15	41	0.5	2.0
40	68.50	137	137	15	42	0.5	2.0

PBAR = 29.84

Test 4 Start Time: 1052	Initial Leak Check NDL @ 20.5 "Hg	Sample ID: 4A - 4B	
Test 4 End Time: 1132	Final Leak Check NDL @ 20.5 "Hg	Lab ID: -4	

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	69.04	136	136	15	39	0.5	2.0
5	72.10	137	137	16	42	0.5	2.0
10	74.80	137	137	16	42	0.5	2.0
15	77.95	136	137	16	41	0.5	2.0
20	80.70	137	138	16	41	0.5	2.0
25	83.70	140	141	15	42	0.5	2.0
30	86.56	137	138	17	43	0.5	2.0
35	89.65	137	138	18	42	0.5	2.0
40	92.5	137	138	16	42	0.5	2.0

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC			
Plant Location: Courtice, ON	Test Condition:		Control Box ID: M05498
Test location: APC Outlet No. 2	DGMCF: 1.048		Operator: JG.
Date: DECEMBER 9, 2021	Barometric Pressure: "Hg		Project No: 22085
~0.5 LPM for 40 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: L26516B3-10	

PBAR = 29.91

Test 1 Start Time: 1320	Initial Leak Check NDL @ 22 "Hg	Sample ID: 6A 6B	
Test 1 End Time: 14:00	Final Leak Check @ "Hg	Lab ID: L26516B3-6	

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	7043.18	140	141	16	26	1.0	4.0
5	7046.48	140	142	13	28	1.0	4.0
10	7049.35	140	142	13	28	1.0	4.0
15	7052.95	140	141	13	28	1.0	4.0
20	7054.88	140	142	13	28	1.0	4.0
25	7057.55	140	141	13	29	1.0	4.5
30	7060.95	140	141	12	29	1.0	4.5
35	7064.1	140	141	13	29	1.0	4.5
40	7067.15	140	141	13	29	1.0	4.5

PBAR = 29.89

Test 2 Start Time: 1405	Initial Leak Check NDL @ 22 "Hg	Sample ID: 7A · 7B	
Test 2 End Time: 1545	Final Leak Check NDL @ 22 "Hg	Lab ID: -7	

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	7068.80	140	141	13	28	1.1	4.0
5	7071.0	140	142	12	28	1.1	4.0
10	7074.12	140	142	13	29	1.1	4.0
15	7077.10	140	142	13	29	1.1	4.0
20	7080.12	140	142	13	29	1.1	4.0
25	7083.5	140	143	13	29	1.1	4.0
30	7086.80	140	143	13	29	1.1	4.0
35	7090.10	140	143	12	29	1.1	4.0
40	7093.30	140	143	13	29	1.1	4.0

ORTECH Consulting Inc.

Vost Data Sheet

Plant: Covanta DYEC			
Plant Location: Courtice, ON	Test Condition:		Control Box ID: M05498
Test location: APC Outlet No. 2	DGMCF: 1.048		Operator: JC.
Date: DECEMBER 9, 2021	Barometric Pressure: "Hg		Project No: 22085
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: L2651683-10	

PBAR = 29.89

Test 3 Start Time: 1450	Initial Leak Check NDL @ 22 "Hg	Sample ID: L2651683-8	
Test 3 End Time: 1530	Final Leak Check NDL @ 22 "Hg	Lab ID: 8A 8B	

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	7093.93	140	143	15	28	1.0	4.0
5	7097.16	140	144	14	29	1.0	4.0
10	7100.05	140	143	13	29	1.0	4.0
15	7102.90	140	144	13	29	1.0	4.0
20	7106.55	140	144	13	29	1.0	4.0
25	7110.15	141	144	14	30	1.0	4.0
30	7113.65	140	144	14	30	1.0	4.0
35	7117.20	140	144	14	30	1.0	4.0
40	7120.3	140	144	14	30	1.0	4.0

PBAR = 29.88

Test 4 Start Time: 1535	Initial Leak Check NDL @ 22 "Hg	Sample ID: 9A 9B	
Test 4 End Time: 1615	Final Leak Check @ "Hg	Lab ID: -9	

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	7120.8	140	145	17	28	1.0	4.0
5	7123.40	140	144	16	29	1.0	4.0
10	7126.85	140	144	16	29	1.0	4.0
15	7130.28	140	144	17	30	1.0	4.0
20	7133.75	140	144	17	30	1.0	4.0
25	7137.35	140	144	17	30	1.0	4.0
30	7140.80	140	144	17	30	1.0	4.0
35	7144.35	140	144	18	30	1.0	4.0
40	7147.85	140	144	18	30	1.0	4.0

APPENDIX 9

Aldehydes Field Data Sheets
(8 pages)

Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Aldehydes
Sample Volume Corrections

Test No.	DGMCF	Initial DGM Reading (L)	Final DGM Reading (L)	Actual Vol. Sampled (L)	Barometric Pressure (in Hg)	Average DGM Pressure del H (in H_2O)	Average DGM Temperature (°C)	Corrected Volume (L)*	Corrected Volume (Rm^3)*
1	0.997	6497.64	6532.67	35.03	29.80	0.50	40.2	33.14	0.0331
2	0.997	6533.40	6567.10	33.70	29.78	0.50	44.2	31.46	0.0315
3	0.997	6567.55	6601.10	33.55	29.76	0.50	44.2	31.30	0.0313

* Dry at 25°C and 1 atmosphere.

Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Aldehydes
Sample Volume Corrections

Test No.	DGMCF	Initial DGM Reading (L)	Final DGM Reading (L)	Actual Vol. Sampled (L)	Barometric Pressure (in Hg)	Average DGM Pressure del H (in H_2O)	Average DGM Temperature (°C)	Corrected Volume (L)*	Corrected Volume (Rm^3)*
1	1.048	6909.83	6946.30	36.47	29.94	1.20	25.2	38.34	0.0383
2	1.048	6948.00	6984.70	36.70	29.95	1.00	26.9	38.35	0.0383
3	1.048	7005.25	7041.20	35.95	29.92	1.00	28.0	37.39	0.0374

* Dry at 25°C and 1 atmosphere.

ORTECH Consulting Inc.
NCASI Method ISS/FP-A105.01

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	1
Test location:	APC Outlet No. 1
Date:	December 1, 2021
Project No.:	22085

Measuring Device	MII Number
Control Module	Vor #3 A120 10
Barometer	Env Canada

Barometric Pressure: 29.80 "Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	649764	134	135	134	26	37	0.5	1
5	6500.60	135	135	137	26	38	0.5	1
10	6503.6	136	137	135	27	39	0.5	1
15	6506.8	136	137	136	26	39	0.5	1
20	6509.7	136	137	136	25	39	0.5	1
25	6512.8	137	137	137	15	40	0.5	1
30	6516.8	137	137	137	16	42	0.5	1
35	6518.3	137	138	137	15	41	0.5	1
40	6521.40	138	138	137	14	41	0.5	1
45	6524.30	142	138	142	14	38	0.5	1
50	6527.0	138	138	139	16	43	0.5	1
55	6529.8	137	138	137	14	43	0.5	1
60	6532.67	137	138	137	14	40	0.5	1

Start Time:	1226		
Finish Time:	1726		
Initial Leak Check:	<.005	Lpm @ 21	" Hg
Final Leak Check:	<.001	Lpm @	" Hg

DGMCF:	0.997
Sample Volume:	35.03
Average DGM Temp:	40.2
Average DGM Δ H:	0.5

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator: for SA

ORTECH Consulting Inc.
NCASI Method ISS/FP-A105.01

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	2
Test location:	APC Outlet No. 1
Date:	DECEMBER 1, 2021
Project No.:	22085

Measuring Device	MII Number
Control Module	Vostro 3 - A12010
Barometer	Env Canada

Barometric Pressure:	29.78	"Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	6533.40	137	138	138	21	42	0.5	1.0
5	6536.20	137	139	137	25	43	0.5	1.0
10	6539.80	132	139	139	24	43	0.5	1.0
15	6542.80	137	139	138	23	45	0.5	1.0
20	6544.66	137	139	137	22	46	0.5	1.0
25	6542.48	137	139	137	22	46	0.5	1.0
30	6550.30	138	139	138	21	44	0.5	1.0
35	6553.0	137	138	137	20	44	0.5	1.0
40	6555.8	137	138	137	20	44	0.5	1.0
45	6558.58	138	137	138	19	44	0.5	1.0
50	6561.55	137	137	137	19	45	0.5	1.0
55	6564.25	137	137	137	19	45	0.5	1.0
60	6567.10	138	136	138	19	44	0.5	1.0

Start Time:	1331		
Finish Time:	1431		
Initial Leak Check:	<0.001	Lpm @ 21	" Hg
Final Leak Check:		Lpm @	" Hg

DGMCF:	0.997
Sample Volume:	33.7
Average DGM Temp:	44
Average DGM Δ H:	0.06

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator:

ORTECH Consulting Inc.
NCASI Method ISS/FP-A105.01

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	3
Test location:	APC Outlet No. 1
Date:	DECEMBER 1, 2021
Project No.:	22085

Measuring Device	MII Number
Control Module	Vost 3 A 12010
Barometer	Env Canada

Barometric Pressure:	29.76 "Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	6567.55	136	136	136	22	42	0.5	1.0
5	6570.48	137	138	137	22	42	0.5	1.0
10	6573.23	137	136	137	22	44	0.5	1.0
15	6575.95	136	137	136	20	43	0.5	1.0
20	6578.85	136	139	136	21	46	0.5	1.0
25	6584.55	138	137	138	21	44	0.5	1.0
30	6586.30	138	137	138	21	44	0.5	1.0
35	6587.25	137	137	137	20	45	0.5	1.0
40	6590.00	137	137	138	20	45	0.5	1.0
45	6592.8	137	136	137	20	44	0.5	1.0
50	6595.50	138	137	138	20	45	0.5	1.0
55	6598.40	138	137	138	20	45	0.5	1.0
60	6601.10	138	137	138	20	45	0.5	1.0

Start Time:	1444		
Finish Time:	1544		
Initial Leak Check:	< .001	Lpm @ 21	" Hg
Final Leak Check:		Lpm @	" Hg

DGMCF:	0.997
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator:

ORTECH Consulting Inc.
NCASI Method ISS/FP-A105.01

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	1
Test location:	APC Outlet No. 2
Date:	DECEMBER 9, 2021
Project No.:	22085

Measuring Device	MII Number
Control Module	M05498
Barometer	Env Canada

Barometric Pressure:	29.94	"Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	6909.63	130	141		16	22	1.2	4.0
5	6912.55	130	141		14	22	1.2	4.0
10	6915.70	130	141		14	25	1.2	4.0
15	6918.85	131	142		14	25	1.2	4.0
20	6921.85	130	142		14	25	1.2	4.0
25	6924.80	140	140		14	26	1.2	4.0
30	6927.95	142	140		14	26	1.2	4.0
35	6931.15	144	141		14	26	1.2	4.0
40	6934.20	141	141		14	26	1.2	4.0
45	6937.25	141	141		14	26	1.2	4.0
50	6934.20	141	141		14	26	1.2	4.0
55	6943.30	141	141		14	26	1.2	4.0
60	6946.30	141	141		14	26	1.2	4.0

Start Time:	0934		
Finish Time:	1034		
Initial Leak Check:	< 0.01	Lpm @ 20	" Hg
Final Leak Check:		Lpm @	" Hg

DGMCF:	1.048
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator:

ORTECH Consulting Inc.
NCASI Method ISS/FP-A105.01

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	2
Test location:	APC Outlet No. 2
Date:	DECEMBER 9, 2021
Project No.:	22085

Measuring Device	MII Number
Control Module	M05498
Barometer	Env Canada

Barometric Pressure:	29.95	"Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	6948.0	137	141		17	25	1.0	3.5
5	6950.95	141	141		17	26	1.0	3.5
10	6954.20	141	142		17	26	1.0	3.5
15	6957.25	141	141		16	27	1.0	3.5
20	6960.23	141	141		16	27	1.0	3.5
25	6963.30	141	141		16	27	1.0	3.5
30	6966.40	141	142		16	27	1.0	3.5
35	6969.30	141	142		16	27	1.0	3.5
40	6972.56	141	142		16	27	1.0	3.5
45	6975.55	141	141		16	27	1.0	3.5
50	6978.90	141	141		16	28	1.0	3.5
55	6981.80	141	142		16	28	1.0	3.5
60	6984.70	141	141		16	28	1.0	3.5

Start Time:	1041		
Finish Time:	1141		
Initial Leak Check:	<.01	Lpm @	22 " Hg
Final Leak Check:	<.01	Lpm @	22 " Hg

DGMCF:	1.048
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator:

ORTECH Consulting Inc.
NCASI Method ISS/FP-A105.01

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	1 Dec 9, 2021
Test location:	APC Outlet No. 2
Date:	5 3
Project No.:	22085

Measuring Device	MII Number
Control Module	M 05498
Barometer	Env Canada

Barometric Pressure:	29.92	"Hg

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temp Average °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	7005.25	138	141		17	26	1.0	3.5
5	7008.30	141	142		17	27	1.0	3.5
10	7011.10	141	142		17	27	1.0	3.5
15	7014.10	141	142		17	28	1.0	3.5
20	7017.0	141	142		17	28	1.0	3.5
25	7020.0	141	142		17	28	1.0	3.5
30	7022.95	141	141		17	28	1.0	3.5
35	7025.98	141	141		17	28	1.0	3.5
40	7028.9	141	141		17	29	1.0	3.5
45	7031.90	141	141		17	28	1.0	3.5
50	7034.70	141	142		17	29	1.0	3.5
55	7037.98	141	142		17	29	1.0	3.5
60	7041.20	141	142		17	29	1.0	3.5

Start Time:	1203		
Finish Time:	1303		
Initial Leak Check:	2.01	Lpm @	22 " Hg
Final Leak Check:		Lpm @	" Hg

DGMCF:	1.048
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator:

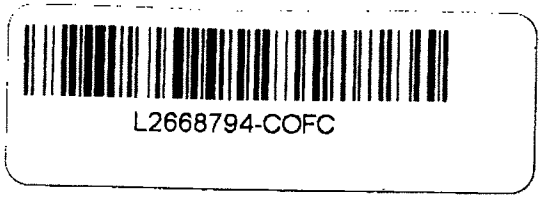
APPENDIX 10

ORTECH Sample Log/Chain of Custody Forms
(21 pages)

ORTECH Consulting Inc. - Sample Log

Acid Gases

Covanta



Client: Covanta
Job/Report Number: 22085
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO #: 22085 - J2819

ORTECH Sample ID 21-22085-M26A-	Sample Date	Location	Sample Description	Media	Initial Volume(ml)	Final Volume(ml)	Sample Analysis
1	NOV 29/21 ↓ NOV 30/21	APC Outlet # 1	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200		HCl, HF & Ammonia
2		APC Outlet # 1	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200		HCl, HF & Ammonia
3		APC Outlet # 1	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200		HCl, HF & Ammonia
4		APC Outlet # 2	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200		HCl, HF & Ammonia
5		APC Outlet # 2	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200		HCl, HF & Ammonia
6	NOT DELIVERED	APC Outlet # 2	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200		HCl, HF & Ammonia
Blank 1	NOV 30, 21	APC # 1	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200		HCl, HF & Ammonia
Blank 2		APC # 2	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200		HCl, HF & Ammonia

Analyze for HCl, HF and Ammonia

Relinquished By: DAN TURTON Date: DEC 1, 21

Relinquished To: ARRAN BULTON Date: 2-Dec-2021 12:30

9.8°C

Client: Covanta
Job/Report Number: 22085
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote/ PO: 22085-J2819

ORTECH Sample ID 21-22085-M201A-	Date	Test No.	Location	Sample Description	Sample Media	Sample Analysis
1	30-Nov-21	1	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
2				PM 2.5 cyclone Rinse	Acetone	Particulate
3				PM 2.5 exit & connectors	Acetone	Particulate
4				Back up filter	filter	Particulate
5				Impinger Soln & rinse	Water	Particulate
6				Secondary Filter	Filter	Particulate*
7				Impinger Rinse	Acetone & Hexane	Particulate
8	30-Nov-21	2	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
9				PM 2.5 cyclone Rinse	Acetone	Particulate
10				PM 2.5 exit & connectors	Acetone	Particulate
11				Back up filter	filter	Particulate
12				Impinger Soln & rinse	Water	Particulate
13				Secondary Filter	Filter	Particulate*
14				Impinger Rinse	Acetone & Hexane	Particulate
15	30-Nov-21	3	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
16				PM 2.5 cyclone Rinse	Acetone	Particulate
17				PM 2.5 exit & connectors	Acetone	Particulate
18				Back up filter	filter	Particulate
19				Impinger Soln & rinse	Water	Particulate
20				Secondary Filter	Filter	Particulate*
21				Impinger Rinse	Acetone & Hexane	Particulate
22	29-Nov-21	1	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
23				PM 2.5 cyclone Rinse	Acetone	Particulate
24				PM 2.5 exit & connectors	Acetone	Particulate
25				Back up filter	filter	Particulate
26				Impinger Soln & rinse	Water	Particulate
27				Secondary Filter	Filter	Particulate*
28				Impinger Rinse	Acetone & Hexane	Particulate
29	29-Nov-21	2	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
30				PM 2.5 cyclone Rinse	Acetone	Particulate
31				PM 2.5 exit & connectors	Acetone	Particulate
32				Back up filter	Filter	Particulate
33				Impinger Soln & rinse	Water	Particulate
34				Secondary Filter	Filter	Particulate*
35				Impinger Rinse	Acetone & Hexane	Particulate

L2668800-COFC

Client: Covanta
Job/Report Number: 22085
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote/ PO: 22085-J2819

ORTECH Sample ID		Date	Test No.	Location	Sample Description	Sample Media	Sample Analysis
26	36	29-Nov-21	3	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
27	37				PM 2.5 cyclone Rinse	Acetone	Particulate
28	38				PM 2.5 exit & connectors	Acetone	Particulate
29	39				Back up filter	Filter	Particulate
30	40				Impinger Soln & rinse	Water	Particulate
	41				Secondary Filter	Filter	Particulate*
	42				Impinger Rinse	Acetone & Hexane	Particulate
31	43	30-Nov-21	Blank	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
32	44				PM 2.5 cyclone Rinse	Acetone	Particulate
33	45				PM 2.5 exit & connectors	Acetone	Particulate
34	46				Back up filter	filter	Particulate
35	47				Impinger Soln & rinse	Water	Particulate
	48				Secondary Filter	Filter	Particulate*
	49				Impinger Rinse	Acetone & Hexane	Particulate
36	50	30-Nov-21	Blank	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
37	51				PM 2.5 cyclone Rinse	Acetone	Particulate
38	52				PM 2.5 exit & connectors	Acetone	Particulate
39	53				Back up filter	Filter	Particulate
40	54				Impinger Soln & rinse	Water	Particulate
	55				Secondary Filter	Filter	Particulate*
	56				Impinger Rinse	Acetone & Hexane	Particulate

Note: *To be included in condensible particulate analysis as per US EPA Method 202.

Relinquished To: AARON BURTON Date: 2-Dec-2021 12:30 9.8°C

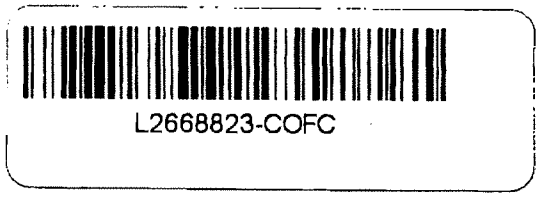
Relinquished By: DAN TURTON Date: DEC 1/21

L2668800-COFC

ORTECH Consulting Inc. - Sample Log
Particulate and Metals Samples
Covanta

Client: Covanta
Project Number: 22085
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
QUOTE/PO: 22085-J2819

	ORTECH Sample ID 21-22085-PM-	Sample Date	Location	Test No.	Sample Description	Sample Media	Sample Analysis
1	1	Nov 29, 21	#1 APC Outlet	1	Probe Rinse Acetone	Acetone	Particulate & Metals
	2				Probe Rinse Nitric	0.1N Nitric	Metals
	3				Filter	Particulate	Particulate & Metals
	4				Impinger 1-5 Solution	Nitric/Peroxide	Metals
	5				Impinger 6-7 Solution	Acid. KMnO4	Mercury
	6				Impinger 6-7 Rinse	8N HCl	Mercury
2	7	Nov 29, 21	#1 APC Outlet	2	Probe Rinse Acetone	Acetone	Particulate & Metals
	8				Probe Rinse Nitric	0.1N Nitric	Metals
	9				Filter	Particulate	Particulate & Metals
	10				Impinger 1-5 Solution	Nitric/Peroxide	Metals
	11				Impinger 6-7 Solution	Acid. KMnO4	Mercury
	12				Impinger 6-7 Rinse	8N HCl	Mercury
3	13	Nov 30, 21	#1 APC Outlet	3	Probe Rinse Acetone	Acetone	Particulate & Metals
	14				Probe Rinse Nitric	0.1N Nitric	Metals
	15				Filter	Particulate	Particulate & Metals
	16				Impinger 1-5 Solution	Nitric/Peroxide	Metals
	17				Impinger 6-7 Solution	Acid. KMnO4	Mercury
	18				Impinger 6-7 Rinse	8N HCl	Mercury
4	19	Nov 30, 21	Blank 1	Blank 1	Probe Rinse Acetone	Acetone	Particulate & Metals
	20				Probe Rinse Nitric	0.1N Nitric	Metals
	21				Filter	Particulate	Particulate & Metals
	22				Impinger 1-5 Solution	Nitric/Peroxide	Metals
	23				Impinger 6-7 Solution	Acid. KMnO4	Mercury
	24				Impinger 6-7 Rinse	8N HCl	Mercury



ORTECH Consulting Inc. - Sample Log
Particulate and Metals Samples
Covanta

Client: Covanta
Project Number: 22085
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
QUOTE/PO: 22085-J2819

ORTECH Sample ID 21-22085-PM-	Sample Date	Location	Test No.	Sample Description	Sample Media	Sample Analysis
25	NOV 30/21	#2 APC Outlet	1	Probe Rinse Acetone	Acetone	Particulate & Metals
26				Probe Rinse Nitric	0.1N Nitric	Metals
27				Filter	Particulate	Particulate & Metals
28				Impinger 1-5 Solution	Nitric/Peroxide	Metals
29				Impinger 6-7 Solution	Acid. KMnO4	Mercury
30				Impinger 6-7 Rinse	8N HCl	Mercury
43	NOV 30/21	Blank 2	Blank 2	Probe Rinse Acetone	Acetone	Particulate & Metals
44				Probe Rinse Nitric	0.1N Nitric	Metals
45				Filter	Particulate	Particulate & Metals
46				Impinger 1-5 Solution	Nitric/Peroxide	Metals
47				Impinger 6-7 Solution	Acid. KMnO4	Mercury
48				Impinger 6-7 Rinse	8N HCl	Mercury

Relinquished By: AARON TURTON Date: DEC 1, 21

Relinquished To: AARON PORTER Date: 2-Dec-2021 12:30

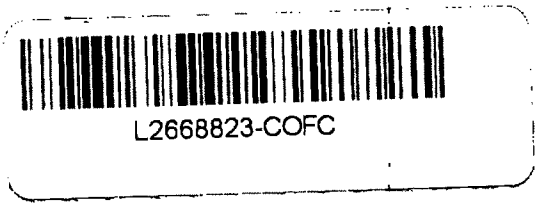
9.8°C

L2668823-COFC

Table 5: Metals

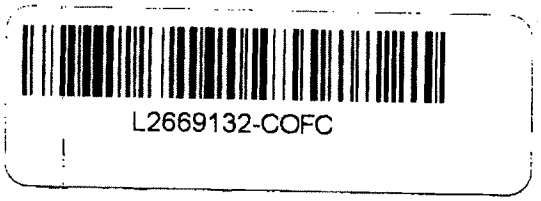
Contaminant Name

Antimony	Chromium	Mercury	Thallium
Arsenic	Cobalt	Molybdenum	Vanadium
Barium	Copper	Nickel	Zinc
Beryllium	Lead	Selenium	
Cadmium	Manganese	Silver	



ORTECH Consulting Inc. - Sample Log
Semi-Volatile Organics Samples
Covanta

Client: Covanta
Job/Report Number: 22085
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
PO: 22085 - J2819



	ORTECH Sample ID 21-22085-SVOC-	Date	Sample Description	Location	Sample Media	Sample Analysis
1	1	DEC 1, 21	Test 1 Probe Rinse	# 1 APC Outlet	Hexane/Acetone	SVOC
	2		Test 1 Filter		Particulate	SVOC
	3		Test 1 XAD-II Trap		N.A.	SVOC
	4		Test 1 Impinger Solution		Ethylene Glycol	SVOC
	5		Test 1 Impinger Rinse		Hexane/Acetone	SVOC
2	6	DEC 1, 21	Test 2 Probe Rinse	# 1 APC Outlet	Hexane/Acetone	SVOC
	7		Test 2 Filter		Particulate	SVOC
	8		Test 2 XAD-II Trap		N.A.	SVOC
	9		Test 2 Impinger Solution		Ethylene Glycol	SVOC
	10		Test 2 Impinger Rinse		Hexane/Acetone	SVOC
3	11	DEC 2, 21	Test 3 Probe Rinse	# 1 APC Outlet	Hexane/Acetone	SVOC
	12		Test 3 Filter		Particulate	SVOC
	13		Test 3 XAD-II Trap		N.A.	SVOC
	14		Test 3 Impinger Solution		Ethylene Glycol	SVOC
	15		Test 3 Impinger Rinse		Hexane/Acetone	SVOC
4	16	DEC 2/21	Blank 1 Probe Rinse	Blank	Hexane/Acetone	SVOC
	17		Blank 1 Filter		Particulate	SVOC
	18		Blank 1 XAD-II Trap		N.A.	SVOC
	19		Blank 1 Impinger Solution		Ethylene Glycol	SVOC
	20		Blank 1 Impinger Rinse		Hexane/Acetone	SVOC

Refer to request letter for lists of analytes.

9:35 14.5C

Relinquished To: Amra Boltic

Date: 3-Dec-2021

Relinquished By:

Date: DEC 3, 21

Table 6: Chlorobenzenes and Chorophenals Compounds

Chlorobenzenes	Chlorophenols
Monochlorobenzene (MCB) 1,2-Dichlorobenzene (1,2-DCB) 1,3-Dichlorobenzene (1,3-DCB) 1,4-Dichlorobenzene (1,4-DCB) 1,2,3-Trichlorobenzene (1,2,3-TCB) 1,2,4-Trichlorobenzene (1,2,4-TCB) 1,3,5-Trichlorobenzene (1,3,5-TCB) 1,2,3,4-Tetrachlorobenzene (1,2,3,4-TeCB) 1,2,3,5-Tetrachlorobenzene (1,2,3,5-TeCB) 1,2,4,5-Tetrachlorobenzene (1,2,4,5-TeCB) Pentachlorobenzene (PeCB) Hexachlorobenzene (HxCB)	2-monochlorophenol (2-MCP) 3-monochlorophenol (3-MCP) 4-monochlorophenol (4-MCP) 2,3-dichlorophenol (2,3-DCP) 2,4-dichlorophenol (2,4-DCP) 2,5-dichlorophenol (2,5-DCP) 2,6-dichlorophenol (2,6-DCP) 3,4-dichlorophenol (3,4-DCP) 3,5-dichlorophenol (3,5-DCP) 2,3,4-trichlorophenol (2,3,4-T3CP) 2,3,5-trichlorophenol (2,3,5-T3CP) 2,3,6-trichlorophenol (2,3,6-T3CP) 2,4,5-trichlorophenol (2,4,5-T3CP) 2,4,6-trichlorophenol (2,4,6-T3CP) 3,4,5-trichlorophenol (3,4,5-T3CP) 2,3,4,5-tetrachlorophenol (2,3,4,5-T4CP) 2,3,4,6-tetrachlorophenol (2,3,4,6-T4CP) 2,3,5,6-tetrachlorophenol (2,3,5,6-T4CP) Pentachlorophenol (PeCP)



L2669132-COFC

Table 8: PCBs and Dioxin/Furan Isomers

Co-Planar PCBs (Dioxin-like PCBs)	Dioxin/Furan Isomers
PCB-077 (3,3',4,4'-TCB)	2,3,7,8-Tetrachlorodibenzo-p-dioxin
PCB-081 (3,4,4',5-TCB)	1,2,3,7,8-Pentachlorodibenzo-p-dioxin
PCB-105 (2,3,3',4,4'-PeCB)	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin
PCB-114 (2,3,4,4',5-PeCB)	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin
PCB-118 (2,3',4,4',5-PeCB)	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin
PCB-123 (2',3,4,4',5-PeCB)	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
PCB-126 (3,3',4,4',5-PeCB)	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin
PCB-156 (2,3,3',4,4',5-HxCB)	
PCB-157 (2,3,3',4,4',5'-HxCB)	2,3,7,8-Tetrachlorodibenzofuran
PCB-167 (2,3',4,4',5,5'-HxCB)	2,3,4,7,8-Pentachlorodibenzofuran
PCB-169 (3,3',4,4',5,5'-HxCB)	1,2,3,7,8-Pentachlorodibenzofuran
PCB-189 (2,3,3',4,4',5,5'-HpCB)	1,2,3,4,7,8-Hexachlorodibenzofuran
	1,2,3,6,7,8-Hexachlorodibenzofuran
	1,2,3,7,8,9-Hexachlorodibenzofuran
	2,3,4,6,7,8-Hexachlorodibenzofuran
	1,2,3,4,6,7,8-Heptachlorodibenzofuran
	1,2,3,4,7,8,9-Heptachlorodibenzofuran
	1,2,3,4,6,7,8,9-Octachlorodibenzofuran



L2669132-COFC

Table 7: Poly Organic and Volatile Organic Compounds

Polycyclic Organic Matter	Volatile Organic Matter
Acenaphthylene	Acetaldehyde
Acenaphthene	Acetone
Anthracene	Acrolein
Benzo(a)anthracene	Benzene
Benzo(b)fluoranthene	Bromodichloromethane
Benzo(k)fluoranthene	Bromoform
Benzo(a)fluorene	Bromomethane
Benzo(b)fluorene	Butadiene, 1,3 -
Benzo(ghi)perylene	Butanone, 2 -
Benzo(a)pyrene	Carbon Tetrachloride
Benzo(e)pyrene	Chloroform
Biphenyl	Cumene
2-Chloronaphthalene	Dibromochloromethane
Chrysene	Dichlorodifluoromethane
Coronene	Dichloroethane, 1,2 -
Dibenzo(a,c)anthracene	Dichloroethene, Trans - 1,2
Dibenzo(a,h)anthracene	Dichloroethene, 1,1 -
Dibenzo(a,e)pyrene	Dichloropropane, 1,2 -
9,10-Dimethylanthracene	Ethylbenzene
7,12-Dimethylbenzo(a)anthracene	Ethylene Dibromide
Fluoranthene	Formaldehyde
Fluorene	Mesitylene
Indeno(1,2,3-cd)pyrene	Methylene Chloride
2-Methylanthracene	Styrene
3-Methylcholanthrene	Tetrachloroethene
1-Methylnaphthalene	Toluene
2-Methylnaphthalene	Trichloroethane, 1,1,1 -
1-Methylphenanthrene	Trichloroethene
9-Methylphenanthrene	Trichloroethylene, 1,1,2 -
Naphthalene	Trichlorotrifluoroethane
Perylene	Trichlorofluoromethane
Phenanthrene	Xylenes, M-, P- and O-
Picene	Vinyl Chloride
Pyrene	
Tetralin	
M-terphenyl	
O-terphenyl	
P-terphenyl	
Triphenylene	



ORTECH Consulting Inc. - Sample Log
VOCs

Client: Covanta
Project Number: 22085
Received By: C Belore
Job Assigned To: ALS
Quote / PO : 22085-J2819

L2669187-COFC

Test Location	Test Number	ORTECH Sample ID 21-22085-VOST-	Sample Date	Sample Description	Sample Analysis
# 1 APC Outlet	1	1A, B	DEC 1/21	Tenax and Tenax/Charcoal	VOCs
	2	2A, B		Tenax and Tenax/Charcoal	VOCs
	3	3A, B		Tenax and Tenax/Charcoal	VOCs
	4	4A, B		Tenax and Tenax/Charcoal	~~VOCs~~ ARCHIVED
	Field Blank	5A, B		Tenax and Tenax/Charcoal	VOCs
	Combined Condesate			Archived @ ORTECH	

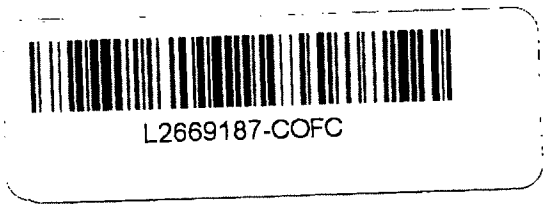
Custody Relinquished by: [signature] Date: DEC 3/21

Custody Received by: AARON BURTON Date: 3-Dec-2021 9:35

14.5C

Table 7: Poly Organic and Volatile Organic Compounds

Polycyclic Organic Matter	Volatile Organic Matter
Acenaphthylene	Acetaldehyde
Acenaphthene	Acetone
Anthracene	Acrolein
Benzo(a)anthracene	Benzene
Benzo(b)fluoranthene	Bromodichloromethane
Benzo(k)fluoranthene	Bromoform
Benzo(a)fluorene	Bromomethane
Benzo(b)fluorene	Butadiene, 1,3 -
Benzo(ghi)perylene	Butanone, 2 -
Benzo(a)pyrene	Carbon Tetrachloride
Benzo(e)pyrene	Chloroform
Biphenyl	Cumene
2-Chloronaphthalene	Dibromochloromethane
Chrysene	Dichlorodifluoromethane
Coronene	Dichloroethane, 1,2 -
Dibenzo(a,c)anthracene	Dichloroethene, Trans - 1,2
Dibenzo(a,h)anthracene	Dichloroethene, 1,1 -
Dibenzo(a,e)pyrene	Dichloropropane, 1,2 -
9,10-Dimethylanthracene	Ethylbenzene
7,12-Dimethylbenzo(a)anthracene	Ethylene Dibromide
Fluoranthene	Formaldehyde
Fluorene	Mesitylene
Indeno(1,2,3-cd)pyrene	Methylene Chloride
2-Methylanthracene	Styrene
3-Methylcholanthrene	Tetrachloroethene
1-Methylnaphthalene	Toluene
2-Methylnaphthalene	Trichloroethane, 1,1,1 -
1-Methylphenanthrene	Trichloroethene
9-Methylphenanthrene	Trichloroethylene, 1,1,2 -
Naphthalene	Trichlorotrifluoroethane
Perylene	Trichlorofluoromethane
Phenanthrene	Xylenes, M-, P- and O-
Picene	Vinyl Chloride
Pyrene	
Tetralin	
M-terphenyl	
O-terphenyl	
P-terphenyl	
Triphenylene	



ORTECH Consulting Inc. Recovery & Sample Log
NCASI Method ISS/FP-A105.01

L2669191-COFC

Client: Covanata DYLC
Job/Report Number: 22055
Received By: Chris Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote PO #: 22055 - J2519

Test Number	Test Location	ORTECH Sample ID 21-22055-	Date Sampled	ID of BHA Sample Bottle	Empty Weight BHA Sample Bottle (g)	Initial Weight Sample Bottle + BHA (g)	Final Weight of BHA Sample Bottle (g)	Weight of Sample Bottle BHA & H2O (g)	Weight of Sample Bottle BHA & H2O & Hexane (g)
1	[illegible]	ALD-1	DEC 1, 21	ALD-1	109.1	157.7	159.8	171.2	177.6
2	[illegible]	ALD-2	↓	ALD-2	108.9	157.8	158.4	173.5	180.3
3	[illegible]	ALD-3	↓	ALD-3	109.4	158.8	163.1	182.0	190.9
[illegible]	[illegible]	[illegible]	↓	ALD-4	109.3	158.8	158.8	172.0	179
[illegible]	[illegible]	ALD-5		ALD-5	109.0	158.4			
2	[illegible]	ALD-6		ALD-6	109.6	158.9			
3	[illegible]	ALD-7		ALD-7	109.1	159.4			
[illegible]	[illegible]	[illegible]		ALD-8	108.5	159.1			
				ALD-9	109.1	160.2			
			na	na	na	na	na	na	na
			na	na	na	na	na	na	na
				ALD-10	109.5	162.1			

Analyze each sample for Acetaldehyde, Formaldehyde, Acrolein.

Relinquished by: [signature] Date: DEC 3, 21

Relinquished to: Aaron Burton Date: 3-Dec-2021 9:35 14.5°C

ORTECH Consulting Inc. - Sample Log
VOCs

Client: Covanta
Project Number: 22085
Received By: C Belore
Job Assigned To: ALS
Quote / PO : 22085-J2819

L2671358-COFC

Test Location	Test Number	ORTECH Sample ID 21-22085-VOST-	Sample Date	Sample Description	Sample Analysis
# 2 APC Outlet	1	6	Dec 9, 21	Tenax and Tenax/Charcoal	VOCs
	2	7	↓	Tenax and Tenax/Charcoal	VOCs
	3	8		Tenax and Tenax/Charcoal	VOCs
	4	9		Tenax and Tenax/Charcoal	Archive
	Field Blank	10		Tenax and Tenax/Charcoal	VOCs
	Trip Blank	11		Tenax and Tenax/Charcoal	VOCs
	Combined Condesate			Archived @ ORTECH	

Custody Relinquished by: _____ Date: _____

Custody Received by: Arran Burton Date: 10-Dec-2021
9:40 9.6°C

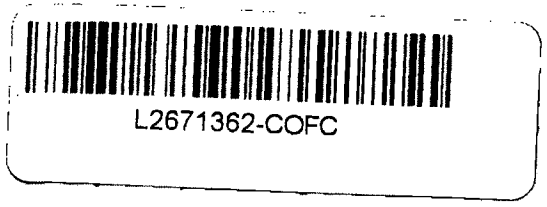
Table 7: Poly Organic and Volatile Organic Compounds

Polycyclic Organic Matter	Volatile Organic Matter
Acenaphthylene	Acetaldehyde
Acenaphthene	Acetone
Anthracene	Acrolein
Benzo(a)anthracene	Benzene
Benzo(b)fluoranthene	Bromodichloromethane
Benzo(k)fluoranthene	Bromoform
Benzo(a)fluorene	Bromomethane
Benzo(b)fluorene	Butadiene, 1,3 -
Benzo(ghi)perylene	Butanone, 2 -
Benzo(a)pyrene	Carbon Tetrachloride
Benzo(e)pyrene	Chloroform
Biphenyl	Cumene
2-Chloronaphthalene	Dibromochloromethane
Chrysene	Dichlorodifluoromethane
Coronene	Dichloroethane, 1,2 -
Dibenzo(a,c)anthracene	Dichloroethene, Trans - 1,2
Dibenzo(a,h)anthracene	Dichloroethene, 1,1 -
Dibenzo(a,e)pyrene	Dichloropropane, 1,2 -
9,10-Dimethylanthracene	Ethylbenzene
7,12-Dimethylbenzo(a)anthracene	Ethylene Dibromide
Fluoranthene	Formaldehyde
Fluorene	Mesitylene
Indeno(1,2,3-cd)pyrene	Methylene Chloride
2-Methylanthracene	Styrene
3-Methylcholanthrene	Tetrachloroethene
1-Methylnaphthalene	Toluene
2-Methylnaphthalene	Trichloroethane, 1,1,1 -
1-Methylphenanthrene	Trichloroethene
9-Methylphenanthrene	Trichloroethylene, 1,1,2 -
Naphthalene	Trichlorotrifluoroethane
Perylene	Trichlorofluoromethane
Phenanthrene	Xylenes, M-, P- and O-
Picene	Vinyl Chloride
Pyrene	
Tetralin	
M-terphenyl	
O-terphenyl	
P-terphenyl	
Triphenylene	

L2671358-COFC

ORTECH Consulting Inc. Recovery & Sample Log
NCASI Method ISS/FP-A105.01

Client: Covanata DYEC
Job/Report Number: 22085
Received By: Chris Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO #: 22085 - J2819



Test Number	Test Location	ORTECH Sample ID 21-22085-	Date Sampled	ID of BHA Sample Bottle	Empty Weight BHA Sample Bottle (g)	Initial Weight Sample Bottle + BHA (g)	Final Weight of BHA Sample Bottle (g)	Weight of Sample Bottle BHA & H2O (g)	Weight of Sample Bottle BHA & H2O & Hexane (g)
1	APC Outlet #1	ALD-1		ALD-1	109.1	157.7	159.8	171.2	177.6
2	APC Outlet #1	ALD-2		ALD-2	108.9	157.8	158.4	173.5	180.3
3	APC Outlet #1	ALD-3		ALD-3	109.4	158.8	163.1	183.0	190.9
Blank 1	APC Outlet #1	Blank 1		ALD-4	109.3	158.8	158.8	172.8	179.1
1	APC Outlet #2	ALD-5	12/09/21	ALD-5	109.0	158.4	161.3	169.6	175.8
2	APC Outlet #2	ALD-6	"	ALD-6	109.6	158.9	166.8	180.8	188.5
~~3~~	~~APC Outlet #2~~	~~ALD-7~~		~~ALD-7~~	~~109.1~~	~~159.4~~	~~166~~		
Blank 2	APC Outlet #2	Blank 2	12/09/21	ALD-8	108.5	159.1	167.1 ↔ 159.0		176.4
3	APC outlet #2		12/09/21	ALD-9	109.1	160.2	162.1	169.4	176.4
	Field BHA&Spike		na	na	na	na	na	na	na
	BHA Blank		na	na	na	na	na	na	na
				ALD-10	109.5	162.1			

Analyze each sample for Acetaldehyde, Formaldehyde, Acrolein.

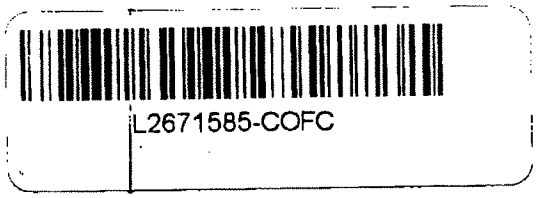
Relinquished by: _____ **Date:** _____

Relinquished to: ARA Bueta **Date:** 10-Dec-2021 9:40 9.6°C

ORTECH Consulting Inc. - Sample Log
Semi-Volatile Organics Samples
Covanta

Client: Covanta
Job/Report Number: 22085
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
PO: 22085 - J2819

L2671585-COFC



	ORTECH Sample ID 21-22085-SVOC-	Date	Sample Description	Location	Sample Media	Sample Analysis
1	21	9-Dec-21	Test 1 Probe Rinse	# 2 APC Outlet	Hexane/Acetone	SVOC
	22		Test 1 Filter		Particulate	SVOC
	23		Test 1 XAD-II Trap		N.A.	SVOC
	24		Test 1 Impinger Solution		Ethylene Glycol	SVOC
	25		Test 1 Impinger Rinse		Hexane/Acetone	SVOC
2	26	9-Dec-21	Test 2 Probe Rinse	# 2 APC Outlet	Hexane/Acetone	SVOC
	27		Test 2 Filter		Particulate	SVOC
	28		Test 2 XAD-II Trap		N.A.	SVOC
	29		Test 2 Impinger Solution		Ethylene Glycol	SVOC
	30		Test 2 Impinger Rinse		Hexane/Acetone	SVOC
3	31	10-Dec-21	Test 3 Probe Rinse	# 2 APC Outlet	Hexane/Acetone	SVOC
	32		Test 3 Filter		Particulate	SVOC
	33		Test 3 XAD-II Trap		N.A.	SVOC
	34		Test 3 Impinger Solution		Ethylene Glycol	SVOC
	35		Test 3 Impinger Rinse		Hexane/Acetone	SVOC
4	36		Blank 2 Probe Rinse	Blank	Hexane/Acetone	SVOC
	37		Blank 2 Filter		Particulate	SVOC
	38		Blank 2 XAD-II Trap		N.A.	SVOC
	39		Blank 2 Impinger Solution		Ethylene Glycol	SVOC
	40		Blank 2 Impinger Rinse		Hexane/Acetone	SVOC

Refer to request letter for lists of analytes.

Relinquished To: Aaron Bulta Date: 10-Dec-2021 16:00 6.7°C

Relinquished By: _____ Date: _____

Table 8: PCBs and Dioxin/Furan Isomers

Co-Planar PCBs (Dioxin-like PCBs)	Dioxin/Furan Isomers
PCB-077 (3,3',4,4'-TCB)	2,3,7,8-Tetrachlorodibenzo-p-dioxin
PCB-081 (3,4,4',5-TCB)	1,2,3,7,8-Pentachlorodibenzo-p-dioxin
PCB-105 (2,3,3',4,4'-PeCB)	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin
PCB-114 (2,3,4,4',5-PeCB)	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin
PCB-118 (2,3',4,4',5-PeCB)	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin
PCB-123 (2',3,4,4',5-PeCB)	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
PCB-126 (3,3',4,4',5-PeCB)	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin
PCB-156 (2,3,3',4,4',5-HxCB)	
PCB-157 (2,3,3',4,4',5'-HxCB)	2,3,7,8-Tetrachlorodibenzofuran
PCB-167 (2,3',4,4',5,5'-HxCB)	2,3,4,7,8-Pentachlorodibenzofuran
PCB-169 (3,3',4,4',5,5'-HxCB)	1,2,3,7,8-Pentachlorodibenzofuran
PCB-189 (2,3,3',4,4',5,5'-HpCB)	1,2,3,4,7,8-Hexachlorodibenzofuran
	1,2,3,6,7,8-Hexachlorodibenzofuran
	1,2,3,7,8,9-Hexachlorodibenzofuran
	2,3,4,6,7,8-Hexachlorodibenzofuran
	1,2,3,4,6,7,8-Heptachlorodibenzofuran
	1,2,3,4,7,8,9-Heptachlorodibenzofuran
	1,2,3,4,6,7,8,9-Octachlorodibenzofuran



Table 7: Poly Organic and Volatile Organic Compounds

Polycyclic Organic Matter	Volatile Organic Matter
Acenaphthylene	Acetaldehyde
Acenaphthene	Acetone
Anthracene	Acrolein
Benzo(a)anthracene	Benzene
Benzo(b)fluoranthene	Bromodichloromethane
Benzo(k)fluoranthene	Bromoform
Benzo(a)fluorene	Bromomethane
Benzo(b)fluorene	Butadiene, 1,3 -
Benzo(ghi)perylene	Butanone, 2 -
Benzo(a)pyrene	Carbon Tetrachloride
Benzo(e)pyrene	Chloroform
Biphenyl	Cumene
2-Chloronaphthalene	Dibromochloromethane
Chrysene	Dichlorodifluoromethane
Coronene	Dichloroethane, 1,2 -
Dibenzo(a,c)anthracene	Dichloroethene, Trans - 1,2
Dibenzo(a,h)anthracene	Dichloroethene, 1,1 -
Dibenzo(a,e)pyrene	Dichloropropane, 1,2 -
9,10-Dimethylanthracene	Ethylbenzene
7,12-Dimethylbenzo(a)anthracene	Ethylene Dibromide
Fluoranthene	Formaldehyde
Fluorene	Mesitylene
Indeno(1,2,3-cd)pyrene	Methylene Chloride
2-Methylanthracene	Styrene
3-Methylcholanthrene	Tetrachloroethene
1-Methylnaphthalene	Toluene
2-Methylnaphthalene	Trichloroethane, 1,1,1 -
1-Methylphenanthrene	Trichloroethene
9-Methylphenanthrene	Trichloroethylene, 1,1,2 -
Naphthalene	Trichlorotrifluoroethane
Perylene	Trichlorofluoromethane
Phenanthrene	Xylenes, M-, P- and O-
Picene	Vinyl Chloride
Pyrene	
Tetralin	
M-terphenyl	
O-terphenyl	
P-terphenyl	
Triphenylene	



Table 6: Chlorobenzenes and Chorophenals Compounds

Chlorobenzenes	Chlorophenols
Monochlorobenzene (MCB) 1,2-Dichlorobenzene (1,2-DCB) 1,3-Dichlorobenzene (1,3-DCB) 1,4-Dichlorobenzene (1,4-DCB) 1,2,3-Trichlorobenzene (1,2,3-TCB) 1,2,4-Trichlorobenzene (1,2,4-TCB) 1,3,5-Trichlorobenzene (1,3,5-TCB) 1,2,3,4-Tetrachlorobenzene (1,2,3,4-TeCB) 1,2,3,5-Tetrachlorobenzene (1,2,3,5-TeCB) 1,2,4,5-Tetrachlorobenzene (1,2,4,5-TeCB) Pentachlorobenzene (PeCB) Hexachlorobenzene (HxCB)	2-monochlorophenol (2-MCP) 3-monochlorophenol (3-MCP) 4-monochlorophenol (4-MCP) 2,3-dichlorophenol (2,3-DCP) 2,4-dichlorophenol (2,4-DCP) 2,5-dichlorophenol (2,5-DCP) 2,6-dichlorophenol (2,6-DCP) 3,4-dichlorophenol (3,4-DCP) 3,5-dichlorophenol (3,5-DCP) 2,3,4-trichlorophenol (2,3,4-T3CP) 2,3,5-trichlorophenol (2,3,5-T3CP) 2,3,6-trichlorophenol (2,3,6-T3CP) 2,4,5-trichlorophenol (2,4,5-T3CP) 2,4,6-trichlorophenol (2,4,6-T3CP) 3,4,5-trichlorophenol (3,4,5-T3CP) 2,3,4,5-tetrachlorophenol (2,3,4,5-T4CP) 2,3,4,6-tetrachlorophenol (2,3,4,6-T4CP) 2,3,5,6-tetrachlorophenol (2,3,5,6-T4CP) Pentachlorophenol (PeCP)



L2671585-COFC

ORTECH Consulting Inc. - Sample Log
Particulate and Metals Samples
Covanta

Client: Covanta
Project Number: 22085
Received By: C Belore
How Received: Train Recovery
Job Assigned To: ALS
QUOTE/PO: 22085-J2819

L2668823-COFC

ORTECH Sample ID 21-22085-PM-	Sample Date	Location	Test No.	Sample Description	Sample Media	Sample Analysis
31	DEC 1/21	#2 APC Outlet	2	Probe Rinse Acetone	Acetone	Particulate & Metals
32				Probe Rinse Nitric	0.1N Nitric	Metals
33				Filter	Particulate	Particulate & Metals
34				Impinger 1-5 Solution	Nitric/Peroxide	Metals
35				Impinger 6-7 Solution	Acid. KMnO4	Mercury
36				Impinger 6-7 Rinse	8N HCl	Mercury
37	DEC 1/21	#2 APC Outlet	3	Probe Rinse Acetone	Acetone	Particulate & Metals
38				Probe Rinse Nitric	0.1N Nitric	Metals
39				Filter	Particulate	Particulate & Metals
40				Impinger 1-5 Solution	Nitric/Peroxide	Metals
41				Impinger 6-7 Solution	Acid. KMnO4	Mercury
42				Impinger 6-7 Rinse	8N HCl	Mercury

Relinquished By: [signature] Date: DEC 3, 21

Relinquished To: AARON BOULTON Date: 3-Dec-2021 9:35

14.5°C

APPENDIX 11

Particulate and Metals Train Recovery Data Sheets
(8 pages)

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22085
Date: Nov 29, 21
Test No.: 1
Test Location: U1

Nozzle, Probe Liner, Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	283.5
After Act. Rinse:	359.1
Total TS1:	75.6

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	284.0
After 0.1N HNO_3 Rinse:	494.9
Total TS2:	210.9

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

CONTAINER TS3

Filter ID:	QZ 8787
Colour:	WHITE

Seal and label container TS3

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	569.2
Final Wt:	976.0
1 Gain:	307.8
Colour:	clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	648.7
Initial Wt:	779.9
Final Wt:	831.7
2 Gain:	51.8
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	651.3
Initial Wt:	760.3
Final Wt:	788.0
3 Gain:	27.7
Colour:	clear

Impinger #4 Empty	
Empty Wt:	591.9
Final Wt:	594.4
4 Gain:	2.6
Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	407.0
w/ Imp. 1-4 Soln:	1024.0
After HNO_3 Rinse:	1114.0
Total TS4:	707.0

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	667.4
Initial Wt:	782.4
Final Wt:	785.5
5 Gain:	3.1
Colour:	purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	664.0
Initial Wt:	772.5
Final Wt:	776.8
6 Gain:	4.3
Colour:	purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	407.0
With Imp. 5&6 Soln:	632.1
After $KMnO_4$ Rinse:	751.5
After100g H_2O Rinse:	947.7
Total TS5-A:	440.7

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	283.5
With 150 mL DI H_2O:	435.7
After HCl Rinse:	470.4
After DI H_2O Rinse:	670.4
Total TS5-B:	386.9

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	923.0
Final Wt:	948.3
7 Gain:	25.3

Impinger Box ID: 7

SAMPLE IDENTIFICATION	21-22085-PM-
TS1 (Probe Rinse-Acetone)	1
TS2 (Probe Rinse-0.1N HNO_3)	2
TS3 (Filter)	3
TS4 (Impinger 1-4 Sol'n-HNO_3)	4
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	5
TS5-B (Impinger 5,6 Rinse-HCl)	6

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 4 L Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6: 427.3

WCBDA= 7: 25.3

Train Loaded By: DT
Train Recovered By: DT

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	22085
Date:	NOV 29, 21
Test No.:	2
Test Location:	U1

Nozzle, Probe Liner, Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	282.5
After Act. Rinse:	378.4
Total TS1:	95.9

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	283.0
After 0.1N HNO_3 Rinse:	541.8
Total TS2:	258.8

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

CONTAINER TS3

Filter ID:	QZ8748
Colour:	WHITE

Seal and label container TS3

SAMPLE IDENTIFICATION	21-22085-PM-
TS1 (Probe Rinse-Acetone)	7
TS2 (Probe Rinse-0.1N HNO_3)	8
TS3 (Filter)	9
TS4 (Impinger 1-4 Sol'n-HNO_3)	10
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	11
TS5-B (Impinger 5,6 Rinse-HCl)	12

Train Loaded By: DT

Train Recovered By: DT

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	678.0
Final Wt:	1005.1
1 Gain:	327.1
Colour:	CLEAR

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	550.5
Initial Wt:	652.2
Final Wt:	784.0
2 Gain:	131.8
Colour:	CLEAR

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	649.4
Initial Wt:	761.6
Final Wt:	777.6
3 Gain:	16.0
Colour:	CLEAR

Impinger #4 Empty	
Empty Wt:	595.8
Final Wt:	597.6
4 Gain:	1.8
Colour:	CLEAR

CONTAINER TS4 WEIGHTS	
Empty Wt:	407.0
w/ Imp. 1-4 Soln:	1092.4
After HNO_3 Rinse:	1208.4
Total TS4:	801.4

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	643.5
Initial Wt:	759.0
Final Wt:	758.7
5 Gain:	-0.3
Colour:	Purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	637.8
Initial Wt:	~~764.8~~ 751.4
Final Wt:	751.4
6 Gain:	0.0
Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	406.5
With Imp. 5&6 Soln:	628.5
After $KMnO_4$ Rinse:	742.4
After100g H_2O Rinse:	847.5
Total TS5-A:	441.0

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	282.5
With 150 mL DI H_2O:	433.4
After HCl Rinse:	483.4
After DI H_2O Rinse:	661.0
Total TS5-B:	378.5

MARK FLUID LEVEL

SEAL & LABEL TS5-B

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 4 L Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6:	476.4 ✓
WCBDA= 7:	24.0

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	969.7
Final Wt:	993.7
7 Gain:	24.0

Impinger Box ID: 1

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22085
Date: NOV/30/21
Test No.: 3
Test Location: UNIT 1

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	282.0
After Act. Rinse:	397.0
Total TS1:	115.0

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	283.5
After 0.1N HNO_3 Rinse:	581.0
Total TS2:	297.5

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

CONTAINER TS3

Filter ID:	27 8791
Colour:	WHITE

Seal and label container TS3

SAMPLE IDENTIFICATION	21-22085-PM-
TS1 (Probe Rinse-Acetone)	13
TS2 (Probe Rinse-0.1N HNO_3)	14
TS3 (Filter)	15
TS4 (Impinger 1-4 Sol'n-HNO_3)	16
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	17
TS5-B (Impinger 5,6 Rinse-HCl)	18

Train Loaded By: DT
Train Recovered By:

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	569.3
Final Wt:	952.3
1 Gain:	383.0
Colour:	clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	650.2
Initial Wt:	753.0
Final Wt:	839.3
2 Gain:	86.3
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	652.5
Initial Wt:	761.9
Final Wt:	782.9
3 Gain:	21.0
Colour:	clear

Impinger #4 Empty	
Empty Wt:	593.0
Final Wt:	594.2
4 Gain:	1.2
Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	405.3
w/ Imp. 1-4 Soln:	1101.3
After HNO_3 Rinse:	1205.0
Total TS4:	799.7

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #S $KMnO_4/H_2SO_4$	
Empty Wt:	669.0
Initial Wt:	784.2
Final Wt:	781.6
5 Gain:	-2.6
Colour:	Purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	665.5
Initial Wt:	775.5
Final Wt:	781.7
6 Gain:	6.2
Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	403.5
With Imp. 5&6 Soln:	628.5
After $KMnO_4$ Rinse:	745.0
7 After100g H_2O Rinse:	843.5
Total TS5-A:	440.0

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	283.0
With 150 mL DI H_2O:	434.5
After HCl Rinse:	479.8
After DI H_2O Rinse:	637.4
Total TSS-B:	354.4

MARK FLUID LEVEL

SEAL & LABEL TS5-B

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 4 L Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6:	495.1 ✓
WCBDA= 7:	23.7

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	949.0
Final Wt:	972.7
7 Gain:	23.7

Impinger Box ID: 7

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22085
Date: NOV 30/21
Test No.:
Test Location: BLANK 1

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	282.3
After Act. Rinse:	396.0
Total TS1:	113.7

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	282.5
After 0.1N HNO_3 Rinse:	487.1
Total TS2:	204.6

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

CONTAINER TS3

Filter ID:	228792
Colour:	WHITE

Seal and label container TS3

SAMPLE IDENTIFICATION	21-22085-PM-
TS1 (Probe Rinse-Acetone)	19
TS2 (Probe Rinse-0.1N HNO_3)	20
TS3 (Filter)	21
TS4 (Impinger 1-4 Sol'n-HNO_3)	22
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	23
TS5-B (Impinger 5,6 Rinse-HCl)	24

Train Loaded By:
Train Recovered By: DT

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	
Initial Wt:	
Final Wt:	
2 Gain:	
Colour:	

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	
Initial Wt:	
Final Wt:	
3 Gain:	
Colour:	

Impinger #4 Empty	
Empty Wt:	
Final Wt:	
4 Gain:	
Colour:	

CONTAINER TS4 WEIGHTS	
Empty Wt:	407.5
w/ Imp. 1-4 Soln:	622.0
After HNO_3 Rinse:	727.8
Total TS4:	320.3

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	
Initial Wt:	
Final Wt:	
5 Gain:	
Colour:	

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	
Initial Wt:	
Final Wt:	
6 Gain:	
Colour:	

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	404.5
With Imp. 5&6 Soln:	628.0
After $KMnO_4$ Rinse:	740.6
After100g H_2O Rinse:	840.0
Total TS5-A:	436.5

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	282.0
With 150 mL DI H_2O:	434.5
After HCl Rinse:	485.1
After DI H_2O Rinse:	587.1
Total TS5-B:	305.1

MARK FLUID LEVEL

SEAL & LABEL TS5-B

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 4 L Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6:

WCBDA= 7:

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	
Final Wt:	
7 Gain:	

Impinger Box ID:

ORTECH Consulting Inc.

Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	22085
Date:	NOV 30/21
Test No.:	1
Test Location:	UNIT 2

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	282.5
After Act. Rinse:	391.5
Total TS1:	99.0

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	283.0
After 0.1N HNO_3 Rinse:	503.0
Total TS2:	220.0

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

CONTAINER TS3

Filter ID:	QZ 8789
Colour:	WHITE

Seal and label container TS3

SAMPLE IDENTIFICATION	21-22085-PM-
TS1 (Probe Rinse-Acetone)	25
TS2 (Probe Rinse-0.1N HNO_3)	26
TS3 (Filter)	27
TS4 (Impinger 1-4 Sol'n-HNO_3)	28
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	29
TS5-B (Impinger 5,6 Rinse-HCl)	30

Train Loaded By: DF

Train Recovered By: BF

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	568.2
Final Wt:	935.7
1 Gain:	367.5
Colour:	clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	648.7
Initial Wt:	755.5
Final Wt:	850.0
2 Gain:	94.5
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	651.3
Initial Wt:	766.8
Final Wt:	789.5
3 Gain:	22.7
Colour:	clear

Impinger #4 Empty	
Empty Wt:	591.8
Final Wt:	594.4
4 Gain:	2.6
Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	407.5
w/ Imp. 1-4 Soln:	1104.5
After HNO_3 Rinse:	1207.2
Total TS4:	799.7

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #S $KMnO_4/H_2SO_4$	
Empty Wt:	667.4
Initial Wt:	788.2
Final Wt:	788.2
5 Gain:	—
Colour:	Purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	664.0
Initial Wt:	779.2
Final Wt:	785.4
6 Gain:	6.2
Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	409.0
With Imp. 5&6 Soln:	641.3
After $KMnO_4$ Rinse:	750.6
After100g H_2O Rinse:	854.2
Total TS5-A:	446.2

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	283.0
With 150 mL DI H_2O:	433.0
After HCl Rinse:	479.7
After DI H_2O Rinse:	633.1
Total TS5-B:	350.1

MARK FLUID LEVEL

SEAL & LABEL TS5-B

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 4 L Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6:	793.5 ✓
WCBDA= 7:	23.5

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	925.7
Final Wt:	949.2
7 Gain:	23.5

Impinger Box ID: 7

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	22085
Date:	DEC 1, 21
Test No.:	3
Test Location:	U 2

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	282.5
After Act. Rinse:	399.5
Total TS1:	117.0

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	284.0
After 0.1N HNO_3 Rinse:	456.7
Total TS2:	172.7

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

CONTAINER TS3

Filter ID:	028190
Colour:	WHITE

Seal and label container TS3

SAMPLE IDENTIFICATION	21-22085-PM-
TS1 (Probe Rinse-Acetone)	31
TS2 (Probe Rinse-0.1N HNO_3)	32
TS3 (Filter)	33
TS4 (Impinger 1-4 Sol'n-HNO_3)	34
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	35
TS5-B (Impinger 5,6 Rinse-HCl)	36

Train Loaded By: DT

Train Recovered By:

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	678.9
Final Wt:	761.7
1 Gain:	282.8
Colour:	clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	551.5
Initial Wt:	660.2
Final Wt:	840.0
2 Gain:	179.8
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	650.5
Initial Wt:	760.0
Final Wt:	780.6
3 Gain:	20.6
Colour:	clear

Impinger #4 Empty	
Empty Wt:	595.8
Final Wt:	601.4
4 Gain:	5.6
Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	404.8
w/ Imp. 1-4 Soln:	1108.5
After HNO_3 Rinse:	1208.3
Total TS4:	803.5

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	675.3
Initial Wt:	746.0
Final Wt:	748.7
5 Gain:	2.7
Colour:	purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	639.4
Initial Wt:	769.6
Final Wt:	771.3
6 Gain:	1.7
Colour:	Purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	406.0
With Imp. 5&6 Soln:	637.6
After $KMnO_4$ Rinse:	749.7
After100g H_2O Rinse:	854.0
Total TS5-A:	448.0

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	284.0
With 150 mL DI H_2O:	434.5
After HCl Rinse:	466.3
After DI H_2O Rinse:	610.8
Total TS5-B:	326.6

MARK FLUID LEVEL

SEAL & LABEL TS5-B

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 4 L Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6:	493.2 ✓
WCBDA= 7:	21.3

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	989.0
Final Wt:	1010.3
7 Gain:	21.3

Impinger Box ID: 1

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22085
Date: DEC 1/21
Test No.: 3
Test Location: U2

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	282.0
After Act. Rinse:	369.3
Total TS1:	87.3

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	283.5
After 0.1N HNO_3 Rinse:	443.1
Total TS2:	159.6

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

CONTAINER TS3

Filter ID: 27894
Colour: WHITE

Seal and label container TS3

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	569.5
Final Wt:	919.7
1 Gain:	350.2
Colour:	clear

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	649.4
Initial Wt:	756.0
Final Wt:	858.4
2 Gain:	102.4
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	652.0
Initial Wt:	757.6
Final Wt:	786.1
3 Gain:	28.5
Colour:	clear

Impinger #4 Empty	
Empty Wt:	592.7
Final Wt:	595.7
4 Gain:	3.0
Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	409.0
w/ Imp. 1-4 Soln:	1094.2
After HNO_3 Rinse:	1198.0
Total TS4:	790.0

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	670.3
Initial Wt:	784.0
Final Wt:	785.6
5 Gain:	1.6
Colour:	purple

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	667.0
Initial Wt:	780.5
Final Wt:	783.0
6 Gain:	2.5
Colour:	purple

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	407.5
With Imp. 5&6 Soln:	634.1
After $KMnO_4$ Rinse:	749.1
After100g H_2O Rinse:	852.4
Total TS5-A:	444.9

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	287.5
With 150 mL DI H_2O:	432.9
After HCl Rinse:	481.0
After DI H_2O Rinse:	667.5
Total TS5-B:	394.0

MARK FLUID LEVEL

SEAL & LABEL TS5-B

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 4 L Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6: 488.2 ✓

WCBDA= 7: 23.1

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	900.5
Final Wt:	923.6
7 Gain:	23.1

Impinger Box ID: 7

SAMPLE IDENTIFICATION	21-22085-PM-
TS1 (Probe Rinse-Acetone)	37
TS2 (Probe Rinse-0.1N HNO_3)	38
TS3 (Filter)	39
TS4 (Impinger 1-4 Sol'n-HNO_3)	40
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	41
TS5-B (Impinger 5,6 Rinse-HCl)	42

Train Loaded By:
Train Recovered By:

ORTECH Consulting Inc.
Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22085
Date: NOV 30/21
Test No.:
Test Location: BLANK 2

Nozzle, Probe Liner, Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	283.0
After Act. Rinse:	418.7
Total TS1:	135.7

MARK FLUID LEVEL

SEAL AND LABEL TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	282.5
After 0.1N HNO_3 Rinse:	405.0
Total TS2:	122.5

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

CONTAINER TS3

Filter ID:	228793
Colour:	WHITE

Seal and label container TS3

Impingers 1, 2, 3, and 4

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #2 HNO_3/H_2O_2	
Empty Wt:	
Initial Wt:	
Final Wt:	
2 Gain:	
Colour:	

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	
Initial Wt:	
Final Wt:	
3 Gain:	
Colour:	

Impinger #4 Empty	
Empty Wt:	
Final Wt:	
4 Gain:	
Colour:	

CONTAINER TS4 WEIGHTS	
Empty Wt:	405.5
w/ Imp. 1-4 Soln:	618.6
After HNO_3 Rinse:	721.8
Total TS4:	316.3

MARK FLUID LEVEL
SEAL AND LABEL TS4

Impinger 5 & 6

Impinger #5 $KMnO_4/H_2SO_4$	
Empty Wt:	
Initial Wt:	
Final Wt:	
5 Gain:	
Colour:	

Impinger # 6 $KMnO_4/H_2SO_4$	
Empty Wt:	
Initial Wt:	
Final Wt:	
6 Gain:	
Colour:	

Impinger 5 & 6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	407.5
With Imp. 5&6 Soln:	634.7
After $KMnO_4$ Rinse:	750.7
After100g H_2O Rinse:	851.2
Total TS5-A:	443.7

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	282.5
With 150 mL DI H_2O:	435.6
After HCl Rinse:	475.8
After DI H_2O Rinse:	585.5
Total TS5-B:	303.0

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 7

Impinger #7 Silica Gel	
Initial Wt:	
Final Wt:	
7 Gain:	

Impinger Box ID:

SAMPLE IDENTIFICATION	21-22085-PM-
TS1 (Probe Rinse-Acetone)	43
TS2 (Probe Rinse-0.1N HNO_3)	44
TS3 (Filter)	45
TS4 (Impinger 1-4 Sol'n-HNO_3)	46
TS5-A (Impinger 5,6 Sol'n-$KMnO_4$)	47
TS5-B (Impinger 5,6 Rinse-HCl)	48

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 4 L Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

CWTR = 1 to 6:

WCBDA= 7:

Train Loaded By: AT
Train Recovered By:

APPENDIX 12

Inorganics Analytical Reports
(37 pages)

ALS Environmental

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2668823		Mississauga, ON L5J 2Y4
Date of Report	14-Dec-21		Canada
Date of Sample Receipt	1-Dec-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS:

Sample Particulate Analysis via Gravimetric USEPA Method 5 (LL4 13-Dec-21)

REPORT FLAGS:

J - The value is uncertain and below what can be reliably identified as positive with a ≥99% confidence limit (i.e. below the laboratory determined MDL).

LCB = Laboratory Control Blank
CVS = Continuing Verification Standard Sample (limits: ±2 in the last decimal)
LOR = Limit of Reporting

Certified by: L. Wrona

Lynne Wrona
Project Manager

Results in this certificate relate only to the samples as submitted to the laboratory.

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ALS Environmental

Sample Analysis Summary Report

Sample Name		21-22085-PM-(1 THRU 6) TEST#1 APC OUTLET#1		21-22085-PM-(7 THRU 12) TEST#2 APC OUTLET#1		21-22085-PM-(13 THRU 18) TEST#3 APC OUTLET#1	21-22085-PM-(19 THRU 24) BLANK1		21-22085-PM-(25 THRU 30) TEST#1 APC OUTLET#2	
ALS Sample ID		L2668823-1		L2668823-2		L2668823-3	L2668823-4		L2668823-5	
Matrix		Stack		Stack		Stack	Stack		Stack	
Analysis type		Sample		Sample		Sample	Sample		Sample	
Sampling Date/Time		29-Nov-21		29-Nov-21		30-Nov-21	30-Nov-21		30-Nov-21	
Date of Receipt		1-Dec-21		1-Dec-21		1-Dec-21	1-Dec-21		1-Dec-21	
PM via Gravimetric Analysis	**LOR**									
Method 5	**mg**	**mg**		**mg**		**mg**	**mg**		**mg**	
Filter Particulate Matter	0.8	0.9		0.2	J	<0.1	0.6	J	1.1	
Acetone Particulate Matter	0.4	0.5		3.4		1.7	0.5		0.2	J
	g	**g**		**g**		**g**	**g**		**g**	
Acetone Mass	0.02	76.3		95.5		114	113		98.5	

ALS Environmental

Sample Analysis Summary Report

Sample Name		21-22085-PM-(31 THRU 36) TEST#2 APC OUTLET#2		21-22085-PM-(37 THRU 42) TEST#3 APC OUTLET#2		21-22085-PM-(43 THRU 48) BLANK2		MB	
ALS Sample ID		L2668823-6		L2668823-7		L2668823-8		L2668823-MB	
Matrix		Stack		Stack		Stack		n/a	
Analysis type		Sample		Sample		Sample		Sample	
Sampling Date/Time		1-Dec-21		1-Dec-21		30-Nov-21		n/a	
Date of Receipt		3-Dec-21		3-Dec-21		1-Dec-21		n/a	
PM via Gravimetric Analysis Method 5	**LOR**								
	mg	**mg**		**mg**		**mg**		**mg**	
Filter Particulate Matter	0.8	<0.1		0.7	J	0.8		<0.1	J
Acetone Particulate Matter	0.4	1.8		0.5		<0.1		0.1	J
	g	**g**		**g**		**g**		**g**	
Acetone Mass	0.02	116		86.7		135		31.3	

ALS Environmental

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2668800		Mississauga, ON L5J 2Y4
Date of Report	15-Dec-21		Canada
Date of Sample Receipt	1-Dec-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS:

Sample Particulate Analysis via Gravimetric USEPA Method 201A (LL4 09-Dec-21)
Sample Particulate Analysis via Gravimetric USEPA Method 202 (LL4 14-Dec-21)

ANALYST COMMENTS:

Sample L2668800-4 arrived to the laboratory with significant moisture in the filter matrix. During desiccation the filter adhered to the petri dish and could not be removed. Data is not quantifiable for this sample.

Filter samples L-19, 24, and 29 show signs of damage, sustained prior to submission to the laboratory. Any possible losses are likely to have been captured in the acetone rinses, however the filter data itself may be biased low. **PE 15-Dec-21**

REPORT FLAGS:

J - The value is uncertain and below what can be reliably identified as positive with a ≥99% confidence limit (i.e. below the laboratory determined MDL).

LCB = Laboratory Control Blank
CVS = Continuing Verification Standard Sample (limits: ±2 in the last decimal)
LOR = Limit of Reporting
nq = Indicates that this value was not quantifiable.

Certified by: L. Wrona

Lynne Wrona
Project Manager

Results in this certificate relate only to the samples as submitted to the laboratory.

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ALS Environmental

Sample Analysis Summary Report

Sample Name		21-22085-M201A-1 TEST#1 APC OUTLET#1	21-22085-M201A-2 TEST#1 APC OUTLET#1	21-22085-M201A-3 TEST#1 APC OUTLET#1	21-22085-M201A-4 TEST#1 APC OUTLET#1	21-22085-M201A-(5-7) TEST#1 APC OUTLET#1
ALS Sample ID		L2668800-1	L2668800-2	L2668800-3	L2668800-4	L2668800-5
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		30-Nov-21	30-Nov-21	30-Nov-21	30-Nov-21	30-Nov-21
Date of Receipt		1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21
PM via Gravimetric Analysis	**LOR**					
Method 201A	**mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-	-	nq	-
Acetone Particulate Matter	0.4	0.1 J	0.2 J	<0.1	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	38.7	36.1	18.1	-	-
PM via Gravimetric Analysis	**LOR**					
Method 202	**mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	2.3
Non-Extractable Condensable Particulates	0.4	-	-	-	-	2.4
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	236

ALS Environmental

Sample Analysis Summary Report

Sample Name		21-22085-M201A-8 TEST#2 APC OUTLET#1	21-22085-M201A-9 TEST#2 APC OUTLET#1	21-22085-M201A-10 TEST#2 APC OUTLET#1	21-22085-M201A-11 TEST#2 APC OUTLET#1	21-22085-M201A-(12-14) TEST#2 APC OUTLET#1
ALS Sample ID		L2668800-6	L2668800-7	L2668800-8	L2668800-9	L2668800-10
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		30-Nov-21	30-Nov-21	30-Nov-21	30-Nov-21	30-Nov-21
Date of Receipt		1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21
PM via Gravimetric Analysis	LOR					
Method 201A	mg	mg	mg	mg	mg	mg
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	0.2 J	0.3 J	0.4 J	-	-
	g	g	g	g	g	g
Acetone Mass	0.02	46.7	32.3	9.8	-	-
PM via Gravimetric Analysis	LOR					
Method 202	mg	mg	mg	mg	mg	mg
Extractable Condensable Particulates	0.4	-	-	-	-	2.8
Non-Extractable Condensable Particulates	0.4	-	-	-	-	3.1
	g	g	g	g	g	g
Water Mass	0.02	-	-	-	-	183

ALS Environmental

Sample Analysis Summary Report

Sample Name		21-22085-M201A-15 TEST#3 APC OUTLET#1	21-22085-M201A-16 TEST#3 APC OUTLET#1	21-22085-M201A-17 TEST#3 APC OUTLET#1	21-22085-M201A-18 TEST#3 APC OUTLET#1	21-22085-M201A-(19-21) TEST#3 APC OUTLET#1
ALS Sample ID		L2668800-11	L2668800-12	L2668800-13	L2668800-14	L2668800-15
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		30-Nov-21	30-Nov-21	30-Nov-21	30-Nov-21	30-Nov-21
Date of Receipt		1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21
PM via Gravimetric Analysis	**LOR**					
Method 201A	**mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	0.1 J	0.1 J	0.3 J	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	31.3	33.8	15.8	-	-
PM via Gravimetric Analysis	**LOR**					
Method 202	**mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	2.1
Non-Extractable Condensable Particulates	0.4	-	-	-	-	3.5
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	238

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Sample Analysis Summary Report

Sample Name		21-22085-M201A-22 TEST#1 APC OUTLET#2	21-22085-M201A-23 TEST#1 APC OUTLET#2	21-22085-M201A-24 TEST#1 APC OUTLET#2	21-22085-M201A-25 TEST#1 APC OUTLET#2	21-22085-M201A-(26-28) TEST#1 APC OUTLET#2
ALS Sample ID		L2668800-16	L2668800-17	L2668800-18	L2668800-19	L2668800-20
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		29-Nov-21	29-Nov-21	29-Nov-21	29-Nov-21	29-Nov-21
Date of Receipt		1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21
PM via Gravimetric Analysis	LOR					
Method 201A	**mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	<0.1	0.1 J	0.3 J	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	26.0	26.7	15.6	-	-
PM via Gravimetric Analysis	LOR					
Method 202	**mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	1.8
Non-Extractable Condensable Particulates	0.4	-	-	-	-	3.0
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	246

ALS Environmental

Sample Analysis Summary Report

Sample Name		21-22085-M201A-29 TEST#2 APC OUTLET#2	21-22085-M201A-30 TEST#2 APC OUTLET#2	21-22085-M201A-31 TEST#2 APC OUTLET#2	21-22085-M201A-32 TEST#2 APC OUTLET#2	21-22085-M201A-(33-35) TEST#2 APC OUTLET#2
ALS Sample ID		L2668800-21	L2668800-22	L2668800-23	L2668800-24	L2668800-25
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		29-Nov-21	29-Nov-21	29-Nov-21	29-Nov-21	29-Nov-21
Date of Receipt		1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21
PM via Gravimetric Analysis	**LOR**					
Method 201A	**mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	0.2 J	0.3 J	0.2 J	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	31.6	34.9	14.1	-	-
PM via Gravimetric Analysis	**LOR**					
Method 202	**mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	2.6
Non-Extractable Condensable Particulates	0.4	-	-	-	-	3.2
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	228

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Sample Analysis Summary Report

Sample Name		21-22085-M201A-36 TEST#3 APC OUTLET#2	21-22085-M201A-37 TEST#3 APC OUTLET#2	21-22085-M201A-38 TEST#3 APC OUTLET#2	21-22085-M201A-39 TEST#3 APC OUTLET#2	21-22085-M201A-(40-42) TEST#3 APC OUTLET#2
ALS Sample ID		L2668800-26	L2668800-27	L2668800-28	L2668800-29	L2668800-30
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		29-Nov-21	29-Nov-21	29-Nov-21	29-Nov-21	29-Nov-21
Date of Receipt		1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21
PM via Gravimetric Analysis Method 201A	**LOR**					
	mg	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	0.1 J	0.1 J	0.1 J	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	33.5	31.8	14.5	-	-
PM via Gravimetric Analysis Method 202	**LOR**					
	mg	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	6.2
Non-Extractable Condensable Particulates	0.4	-	-	-	-	3.3
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	222

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Sample Analysis Summary Report

Sample Name		21-22085-M201A-43 BLANK APC OUTLET#1	21-22085-M201A-44 BLANK APC OUTLET#1	21-22085-M201A-45 BLANK APC OUTLET#1	21-22085-M201A-46 BLANK APC OUTLET#1	21-22085-M201A-(47-49) BLANK APC OUTLET#1
ALS Sample ID		L2668800-31	L2668800-32	L2668800-33	L2668800-34	L2668800-35
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		30-Nov-21	30-Nov-21	30-Nov-21	30-Nov-21	30-Nov-21
Date of Receipt		1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21
PM via Gravimetric Analysis	**LOR**					
Method 201A	**mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-	-	0.7 J	-
Acetone Particulate Matter	0.4	0.1 J	0.4	0.2 J	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	31.9	24.8	25.2	-	-
PM via Gravimetric Analysis	**LOR**					
Method 202	**mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	1.1
Non-Extractable Condensable Particulates	0.4	-	-	-	-	0.5
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	214

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Sample Analysis Summary Report

Sample Name		21-22085-M201A-50 BLANK APC OUTLET#2	21-22085-M201A-51 BLANK APC OUTLET#2	21-22085-M201A-52 BLANK APC OUTLET#2	21-22085-M201A-53 BLANK APC OUTLET#2	21-22085-M201A-(54-56) BLANK APC OUTLET#2
ALS Sample ID		L2668800-36	L2668800-37	L2668800-38	L2668800-39	L2668800-40
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		30-Nov-21	30-Nov-21	30-Nov-21	30-Nov-21	30-Nov-21
Date of Receipt		1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21
PM via Gravimetric Analysis Method 201A	**LOR**					
	mg	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	-	-	0.3 J	-
Acetone Particulate Matter	0.4	0.2 J	0.4 J	0.2 J	-	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	46.6	40.3	43.0	-	-
PM via Gravimetric Analysis Method 202	**LOR**					
	mg	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensable Particulates	0.4	-	-	-	-	0.5
Non-Extractable Condensable Particulates	0.4	-	-	-	-	0.5
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	-	-	-	-	256

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Sample Analysis Summary Report

Sample Name		MB1		MB2	
ALS Sample ID		L2668800-MB1		L2668800-MB2	
Matrix		n/a		n/a	
Analysis type		Sample		Sample	
Sampling Date/Time		n/a		n/a	
Date of Receipt		n/a		n/a	
PM via Gravimetric Analysis Method 201A	**LOR**				
	mg	**mg**		**mg**	
Filter Particulate Matter	0.8	0.1	J	-	
Acetone Particulate Matter	0.4	0.1	J	0.3	J
	g	**g**		**g**	
Acetone Mass	0.02	32.2		31.9	
PM via Gravimetric Analysis Method 202	**LOR**				
	mg	**mg**		**mg**	
Extractable Condensable Particulates	0.4	<0.1		-	
Non-Extractable Condensable Particulates	0.4	0.4	J	-	
	g	**g**		**g**	
Water Mass	0.02	199		-	

ALS Environmental

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2668794		Mississauga, ON
Date of Report	21-Dec-21		L5J 2Y4
Date of Sample Receipt	1-Dec-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS:

F as HF Anion Analyzed via Ion Chromatography USEPA Method 26/26A (GN 20-Dec-21)
Cl as HCl Anion Analyzed via Ion Chromatography USEPA Method 26/26A (GN 20-Dec-21)

LOR = Limit of Reporting
MB = Laboratory Control Blank (limits: <LOR)
LCS = Laboratory Control Sample (limits: 90-110%)
MS = Matrix Spike Sample (limits: 90-110%, NH_3: 85-115%)
RPD = Relative Percent Difference (limits: <20% for sample duplicate, <10% for duplicate injection)

Certified by: L. Wrona

Lynne Wrona
Project Manager

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Sample Analysis Summary Report

Sample Name	21-22085-M26A-1 APC OUTLET #1	21-22085-M26A-2 APC OUTLET #1	21-22085-M26A-3 APC OUTLET #1	21-22085-M26A-4 APC OUTLET #2	21-22085-M26A-5 APC OUTLET #2
ALS Sample ID	L2668794-1	L2668794-2	L2668794-3	L2668794-4	L2668794-5
Matrix	Stack	Stack	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample	Sample	Sample
Sampling Date/Time	29-Nov-21	29-Nov-21	29-Nov-21	30-Nov-21	30-Nov-21
Date of Receipt	1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21
Ion Chromatography Analysis USEPA Method 26/26A	**mg**	**mg**	**mg**	**mg**	**mg**
Total F^- as HF (ave)	<0.146	<0.148	<0.151	<0.151	<0.160
Analysis 1	<0.146	<0.148	<0.151	<0.151	<0.160
Analysis 2	<0.146	<0.148	<0.151	<0.151	<0.160
Total Cl^- as HCl (ave)	5.17	6.32	6.17	5.15	5.96
Analysis 1	5.17	6.38	6.22	5.15	5.97
Analysis 2	5.17	6.27	6.11	5.14	5.95

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Sample Analysis Summary Report

Sample Name	21-22085-M26A-6 APC OUTLET #2	21-22085-M26A-BLANK1 APC OUTLET #1	21-22085-M26A-BLANK2 APC OUTLET #2
ALS Sample ID	L2668794-6	L2668794-7	L2668794-8
Matrix	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample
Sampling Date/Time	1-Dec-21	30-Nov-21	30-Nov-21
Date of Receipt	3-Dec-21	1-Dec-21	1-Dec-21
Ion Chromatography Analysis USEPA Method 26/26A	**mg**	**mg**	**mg**
Total F^- as HF (ave)	<0.151	<0.109	<0.104
Analysis 1	<0.151	<0.109	<0.104
Analysis 2	<0.151	<0.109	<0.104
Total Cl^- as HCl (ave)	6.85	<0.159	<0.152
Analysis 1	6.91	<0.159	<0.152
Analysis 2	6.79	<0.159	<0.152

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Sample QC Summary Report

Sample Name	MB	LCS	LCS
ALS Sample ID	MB	LCS	LCS
Matrix	Stack	Stack	Stack
Analysis type	Method Blank	Blank Spike	Blank Spike
Sampling Date/Time	n/a	n/a	n/a
Date of Receipt	n/a	n/a	n/a
Ion Chromatography Analysis			
USEPA Method 26/26A	**mg**	**mg**	**% Rec**
Total F^- as HF (ave)	0.00255	0.0552	100%
Analysis 1	0.00259	0.0550	
Analysis 2	0.00252	0.0554	
Total Cl^- as HCl (ave)	0.00296	0.0776	97%
Analysis 1	0.00298	0.0787	
Analysis 2	0.00295	0.0766	

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Sample QC Summary Report

Sample Name	21-22085-M26A-1 APC OUTLET #1	21-22085-M26A-1 APC OUTLET #1	21-22085-M26A-1 APC OUTLET #1	21-22085-M26A-1 APC OUTLET #1
ALS Sample ID	L2668794-1	L2668794-1DUP	L2668794-1MS	L2668794-1MS
Matrix	Stack	Stack	Stack	Stack
Analysis type	Sample	Duplicate	Matrix Spike	Matrix Spike
Sampling Date/Time	29-Nov-21	29-Nov-21	29-Nov-21	29-Nov-21
Date of Receipt	1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21
Ion Chromatography Analysis				
USEPA Method 26/26A	**mg**	**mg**	**mg**	**% Rec**
Total F^- as HF (ave)	<0.146	<0.146	4.61	96%
Analysis 1	<0.146	<0.146	4.64	
Analysis 2	<0.146	<0.146	4.58	
Total Cl^- as HCl (ave)	5.17	5.23	12.6	108%
Analysis 1	5.17	5.16	12.5	
Analysis 2	5.17	5.30	12.6	

ALS Environmental

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2668794		Mississauga, ON
Date of Report	20-Dec-21		L5J 2Y4
Date of Sample Receipt	1-Dec-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS:

Ammonia, Total (as NH_3) via Ion Chromatography USEPA Method CTM-027 (GN 7-Dec-21)

LOR = Limit of Reporting
MB = Laboratory Control Blank (limits: <LOR)
LCS = Laboratory Control Sample (limits: 90-110%)
MS = Matrix Spike Sample (limits: 90-110%, NH_3: 85-115%)
RPD = Relative Percent Difference (limits: <20% for sample duplicate, <10% for duplicate injection)

Certified by: L. Wrona

Lynne Wrona
Project Manager

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Sample Analysis Summary Report

Sample Name	21-22085-M26A-1 APC OUTLET #1	21-22085-M26A-2 APC OUTLET #1	21-22085-M26A-3 APC OUTLET #1	21-22085-M26A-4 APC OUTLET #2	21-22085-M26A-5 APC OUTLET #2
ALS Sample ID	L2668794-1	L2668794-2	L2668794-3	L2668794-4	L2668794-5
Matrix	Stack	Stack	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample	Sample	Sample
Sampling Date/Time	29-Nov-21	29-Nov-21	29-Nov-21	30-Nov-21	30-Nov-21
Date of Receipt	1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21
Ion Chromatography Analysis USEPA Method CTM-027 Ammonia	**mg**	**mg**	**mg**	**mg**	**mg**
Total Ammonia as NH_3	0.752	0.756	0.796	0.525	0.795

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Sample Analysis Summary Report

Sample Name	21-22085-M26A-6 APC OUTLET #2	21-22085-M26A-BLANK1 APC OUTLET #1	21-22085-M26A-BLANK2 APC OUTLET #2
ALS Sample ID	L2668794-6	L2668794-7	L2668794-8
Matrix	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample
Sampling Date/Time	1-Dec-21	30-Nov-21	30-Nov-21
Date of Receipt	3-Dec-21	1-Dec-21	1-Dec-21
Ion Chromatography Analysis USEPA Method CTM-027 Ammonia	**mg**	**mg**	**mg**
Total Ammonia as NH_3	2.52	<0.293	<0.278

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Sample QC Summary Report

Sample Name	MB	LCS	LCS
ALS Sample ID	MB	LCS	LCS
Matrix	Stack	Stack	Stack
Analysis type	Method Blank	Blank Spike	Blank Spike
Sampling Date/Time	n/a	n/a	n/a
Date of Receipt	n/a	n/a	n/a
Ion Chromatography Analysis USEPA Method CTM-027 Ammonia	**mg**	**mg**	**% Rec**
Ammonia, Total (as NH_3)	<0.0944	0.972	103%

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Sample QC Summary Report

Sample Name	21-22085-M26A-1 APC OUTLET #1	21-22085-M26A-1 APC OUTLET #1	21-22085-M26A-1 APC OUTLET #1	21-22085-M26A-1 APC OUTLET #1
ALS Sample ID	L2668794-1	L2668794-1DUP	L2668794-1MS	L2668794-1MS
Matrix	Stack	Stack	Stack	Stack
Analysis type	Sample	Duplicate	Matrix Spike	Matrix Spike
Sampling Date/Time	29-Nov-21	29-Nov-21	29-Nov-21	29-Nov-21
Date of Receipt	1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21
Ion Chromatography Analysis USEPA Method CTM-027 Ammonia	**mg**	**mg**	**mg**	**% Rec**
Ammonia, Total (as NH_3)	0.752	0.725	5.34	114%

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1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
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Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2668823		Mississauga, ON L5J 2Y4
Date of Report	16-Dec-21		Canada
Date of Sample Receipt	1-Dec-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS:

Sample Preparation via USEPA Method 29 (SA 14-Dec-2021)
Mercury Analysis via CVAA using Method USEPA 7470A (GN 15-Dec-2021)

LOR = Limit of Reporting
LCB = Laboratory Control Blank (limits: <LOR)
LCS = Laboratory Control Sample (limits: hivol, solids: 85-115%, stack: 90-110%)
MS = Matrix Spike Sample (limits: 75-125%)
RPD = Relative Percent Difference (limits: <20%)
CCV/CVS = Calibration Verification Standard (limits: 85-115%)

Certified by: L. Wrona

Lynne Wrona
Project Manager

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Sample Analysis Summary Report

Sample Name			21-22085-PM-(1 THRU 6) TEST#1 APC OUTLET#1	21-22085-PM-(7 THRU 12) TEST#2 APC OUTLET#1	21-22085-PM-(13 THRU 18) TEST#3 APC OUTLET#1	21-22085-PM-(19 THRU 24) BLANK1	21-22085-PM-(25 THRU 30) TEST#1 APC OUTLET#2
ALS Sample ID			L2668823-1	L2668823-2	L2668823-3	L2668823-4	L2668823-5
Matrix			Stack	Stack	Stack	Stack	Stack
Analysis type			Sample	Sample	Sample	Sample	Sample
Sampling Date/Time			29-Nov-21	29-Nov-21	30-Nov-21	30-Nov-21	30-Nov-21
Date of Receipt			1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21
Mercury via CVAA		**LOR**					
	Method 29	**ug**	**ug**	**ug**	**ug**	**ug**	**ug**
	Analytical Fraction 1B	0.015	<0.015	<0.015	<0.015	<0.015	<0.015
	Analytical Fraction 2B	0.050	<0.17	<0.195	<0.195	<0.075	<0.195
	Analytical Fraction 3B	0.025	<0.025	<0.025	<0.025	<0.025	<0.025
	Analytical Fraction 3C	0.25	<0.25	<0.25	<0.25	<0.25	<0.25

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Sample Analysis Summary Report

Sample Name			21-22085-PM-(31 THRU 36) TEST#2 APC OUTLET#2	21-22085-PM-(37 THRU 42) TEST#3 APC OUTLET#2	21-22085-PM-(43 THRU 48) BLANK2
ALS Sample ID			L2668823-6	L2668823-7	L2668823-8
Matrix			Stack	Stack	Stack
Analysis type			Sample	Sample	Sample
Sampling Date/Time			1-Dec-21	1-Dec-21	30-Nov-21
Date of Receipt			3-Dec-21	3-Dec-21	1-Dec-21
Mercury via CVAA		**LOR**			
	Method 29	**ug**	**ug**	**ug**	**ug**
	Analytical Fraction 1B	0.015	<0.015	<0.015	<0.015
	Analytical Fraction 2B	0.050	<0.1975	<0.1925	<0.075
	Analytical Fraction 3B	0.025	<0.025	<0.025	<0.025
	Analytical Fraction 3C	0.25	<0.25	<0.25	<0.25

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Sample QC Summary Report

Sample Name		LCB	LCS	LCS	LCSD	LCSD
ALS Sample ID		LCB	LCS	LCS	LCSD	LCSD
Analysis type		Method Blank	Blank Spike	Blank Spike	Blank Spike Dup	Blank Spike Dup
Sampling Date/Time		N/A	N/A	N/A	N/A	N/A
Date of Receipt		N/A	N/A	N/A	N/A	N/A
Mercury via CVAA	LOR					
Method 29	**ug**	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Analytical Fraction 1B	0.015	<0.015	0.288	96%	0.289	96%
Analytical Fraction 2B	0.050	<0.05	0.922	93%	0.947	95%
Analytical Fraction 3B	0.025	<0.025	0.469	94%	0.474	95%
Analytical Fraction 3C	0.25	<0.25	4.68	94%	4.65	93%

ALS Environmental

Sample QC Summary Report

Sample Name		21-22085-PM-(1 THRU 6) TEST#1 APC OUTLET#1	21-22085-PM-(1 THRU 6) TEST#1 APC OUTLET#1	21-22085-PM-(1 THRU 6) TEST#1 APC OUTLET#1	21-22085-PM-(1 THRU 6) TEST#1 APC OUTLET#1	21-22085-PM-(1 THRU 6) TEST#1 APC OUTLET#1	21-22085-PM-(1 THRU 6) TEST#1 APC OUTLET#1
ALS Sample ID		L2668823-1	L2668823-1DUP	L2668823-1MS	L2668823-1MS	L2668823-1MSD	L2668823-1MSD
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Duplicate	Matrix Spike	Matrix Spike	Matrix Spike Dup	Matrix Spike Dup
Sampling Date/Time		29-Nov-21	29-Nov-21	29-Nov-21	29-Nov-21	29-Nov-21	29-Nov-21
Date of Receipt		1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21
Mercury via CVAA	**LOR**						
Method 29	**ug**	**ug**	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Analytical Fraction 1B	0.015	<0.015	<0.015	0.288	96%	0.289	96%
Analytical Fraction 2B	0.050	<0.17	<0.17	3.18	93%	3.18	93%
Analytical Fraction 3B	0.025	<0.025	<0.025	0.436	87%	0.440	88%
Analytical Fraction 3C	0.250	<0.25	<0.25	4.77	94%	4.68	92%

ALS Environmental
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2668823		Mississauga, ON L5J 2Y4
Date of Report	20-Dec-21		Canada
Date of Sample Receipt	1-Dec-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS:

Metals analysed via ICP-MS Method USEPA 6020B (SA 15-Dec-21 and 16-Dec-21)
Sample Preparation via USEPA Method 29 (SA 14-Dec-21)

ANALYST COMMENTS:

1A:

Cu, Mo, and Ni observed in the method blank (MB) at levels significantly above their LORs. These analytes were not observed in the reagent blank, indicating they are likely from the filter matrix itself. Sample data is likely to be biased high as a result of these background contributions.

Cu RPD is outside ALS DQOs. MS and MSD recoveries are calculated against the sample and not the duplicate, resulting in good recoveries. It is likely that the sample duplicate is contaminated with copper background.

PE 20-Dec-21

LCB = Laboratory Control Blank
LCS = Laboratory Control Sample
LCSD = Laboratory Control Sample Duplicate
LOR = Limit of Reporting

Certified by: L. Wrona

Lynne Wrona
Project Manager

Results in this certificate relate only to the samples as submitted to the laboratory.
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ALS Environmental

Sample Analysis Summary Report

Sample Name		21-22085-PM-(1 THRU 6) TEST#1 APC OUTLET#1	21-22085-PM-(7 THRU 12) TEST#2 APC OUTLET#1	21-22085-PM-(13 THRU 18) TEST#3 APC OUTLET#1	21-22085-PM-(19 THRU 24) BLANK1	21-22085-PM-(25 THRU 30) TEST#1 APC OUTLET#2	21-22085-PM-(31 THRU 36) TEST#2 APC OUTLET#2
ALS Sample ID		L2668823-1	L2668823-2	L2668823-3	L2668823-4	L2668823-5	L2668823-6
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis Type		Sample	Sample	Sample	Sample	Sample	Sample
Sampling Date		29-Nov-21	29-Nov-21	30-Nov-21	30-Nov-21	30-Nov-21	1-Dec-21
Date of Receipt		1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21	3-Dec-21
Multi-Metals via ICP-MS	**LOR**						
	ug	**ug**	**ug**	**ug**	**ug**	**ug**	**ug**
Front Half HF Fraction 1A							
Antimony	0.2	2.58	3.45	0.230	<	1.87	<
Arsenic	1	1.15	<	<	<	<	<
Barium	5	7.32	6.06	5.86	9.33	5.31	5.92
Beryllium	0.2	<	<	<	<	<	<
Cadmium	0.1	0.200	0.121	0.112	<	0.143	<
Chromium	1	3.70	2.79	2.22	3.44	2.95	2.54
Cobalt	0.2	<	<	<	<	<	<
Copper	1	7.12	6.53	5.77	4.89	6.93	5.68
Lead	0.5	2.45	1.80	0.688	<	0.994	0.515
Molybdenum	0.2	32.0	31.4	31.5	32.9	30.8	33.4
Nickel	0.2	2.52	2.03	1.66	1.56	1.49	1.83
Selenium	2	<	<	<	<	<	<
Silver	0.2	<	<	<	<	<	<
Thallium	0.2	<	<	<	<	<	<
Vanadium	1	<	<	<	<	<	<
Zinc	6	16.3	19.3	14.8	<	11.1	9.06

ALS Environmental

Sample Analysis Summary Report

Sample Name		21-22085-PM-(37 THRU 42) TEST#3 APC OUTLET#2	21-22085-PM-(43 THRU 48) BLANK2	MB
ALS Sample ID		L2668823-7	L2668823-8	L2668823-MB
Matrix		Stack	Stack	n/a
Analysis Type		Sample	Sample	Sample
Sampling Date		1-Dec-21	30-Nov-21	n/a
Date of Receipt		3-Dec-21	1-Dec-21	n/a
Multi-Metals via ICP-MS	**LOR ug**	**ug**	**ug**	**ug**
Front Half HF Fraction 1A				
Antimony	0.2	<	<	<
Arsenic	1	<	<	<
Barium	5	<	<	<
Beryllium	0.2	<	<	<
Cadmium	0.1	<	<	<
Chromium	1	3.55	1.87	2.25
Cobalt	0.2	<	<	<
Copper	1	6.65	5.13	4.26
Lead	0.5	<	<	<
Molybdenum	0.2	32.7	31.4	33.3
Nickel	0.2	3.16	1.14	1.11
Selenium	2	<	<	<
Silver	0.2	<	<	<
Thallium	0.2	<	<	<
Vanadium	1	<	<	<
Zinc	6	7.57	<	<

ALS Environmental

Sample QC Summary Report

Sample Name		RB	LCS	LCS	LCSD	LCSD
ALS Sample ID		RB	LCS	LCS	LCSD	LCSD
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis Type		Blank	LCS	LCS	LCS	LCS
Sampling Date		n/a	n/a	n/a	n/a	n/a
Date of Receipt		n/a	n/a	n/a	n/a	n/a
Multi-Metals via ICP-MS	**LOR**					
	ug	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Front Half HF Fraction 1A						
Antimony	0.2	<	11.1	92	11.2	93
Arsenic	1	<	60.4	101	60.2	100
Barium	5	<	57.3	96	57.5	96
Beryllium	0.2	<	57.2	95	57.7	96
Cadmium	0.1	<	31.0	103	29.6	99
Chromium	1	<	61.0	102	61.3	102
Cobalt	0.2	<	60.1	100	59.3	99
Copper	1	<	62.2	104	61.7	103
Lead	0.5	<	57.7	96	59.0	98
Molybdenum	0.2	<	28.1	94	28.7	96
Nickel	0.2	<	63.1	105	62.3	104
Selenium	2	<	59.8	100	60.5	101
Silver	0.2	<	27.6	92	18.1	60
Thallium	0.2	<	58.4	97	61.4	102
Vanadium	1	<	61.8	103	61.3	102
Zinc	6	<	120	100	118	99

ALS Environmental

Sample QC Summary Report

Sample Name		21-22085-PM-(1 THRU 6) TEST#1 APC OUTLET#1	21-22085-PM-(1 THRU 6) TEST#1 APC OUTLET#1	21-22085-PM-(1 THRU 6) TEST#1 APC OUTLET#1	21-22085-PM-(1 THRU 6) TEST#1 APC OUTLET#1	21-22085-PM-(1 THRU 6) TEST#1 APC OUTLET#1	21-22085-PM-(1 THRU 6) TEST#1 APC OUTLET#1
ALS Sample ID		L2668823-1	L2668823-1	MS	MS	MSD	MSD
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis Type		Sample	Duplicate	Matrix Spike	Matrix Spike	Matrix Spike Dup	Matrix Spike Dup
Sampling Date		29-Nov-21	29-Nov-21	29-Nov-21	29-Nov-21	29-Nov-21	29-Nov-21
Date of Receipt		1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21
Multi-Metals via ICP-MS	**LOR ug**	**ug**	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Front Half HF Fraction 1A							
Antimony	0.2	2.58	2.51	24.4	91	24.5	92
Arsenic	1	1.15	1.18	112	92	112	92
Barium	5	7.32	7.33	115	89	115	90
Beryllium	0.2	<	<	105	87	103	86
Cadmium	0.1	0.200	0.188	58.8	98	57.8	96
Chromium	1	3.70	3.89	113	91	114	92
Cobalt	0.2	<	<	110	91	110	91
Copper	1	7.12	30.0	120	94	119	93
Lead	0.5	2.45	2.41	120	98	122	100
Molybdenum	0.2	32.0	31.6	84.9	88	86.6	91
Nickel	0.2	2.52	2.49	116	95	116	95
Selenium	2	<	<	106	88	110	91
Silver	0.2	<	<	53.3	89	54.1	90
Thallium	0.2	<	<	117	98	120	100
Vanadium	1	<	<	112	93	112	93
Zinc	6	16.3	15.9	238	92	236	91

ALS Environmental

Sample Analysis Summary Report

Sample Name		21-22085-PM-(1 THRU 6) TEST#1 APC OUTLET#1	21-22085-PM-(7 THRU 12) TEST#2 APC OUTLET#1	21-22085-PM-(13 THRU 18) TEST#3 APC OUTLET#1	21-22085-PM-(19 THRU 24) BLANK1	21-22085-PM-(25 THRU 30) TEST#1 APC OUTLET#2	21-22085-PM-(31 THRU 36) TEST#2 APC OUTLET#2
ALS Sample ID		L2668823-1	L2668823-2	L2668823-3	L2668823-4	L2668823-5	L2668823-6
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis Type		Sample	Sample	Sample	Sample	Sample	Sample
Sampling Date		29-Nov-21	29-Nov-21	30-Nov-21	30-Nov-21	30-Nov-21	1-Dec-21
Date of Receipt		1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21	3-Dec-21
Multi-Metals via ICP-MS	**LOR ug**	**ug**	**ug**	**ug**	**ug**	**ug**	**ug**
Back Half (HNO3 / H2O2) Fraction 2A							
Antimony	0.1	<	<	<	<	<	<
Arsenic	0.2	<	<	0.239	<	<	<
Barium	0.5	1.04	1.03	1.49	0.573	0.899	0.705
Beryllium	0.1	<	<	0.678	<	<	<
Cadmium	0.05	<	0.0766	0.397	<	<	<
Chromium	0.15	0.469	1.02	1.17	0.308	0.455	0.435
Cobalt	0.1	0.148	0.123	0.620	<	<	<
Copper	0.3	4.19	3.02	3.25	2.71	2.34	2.30
Lead	0.05	0.562	0.519	0.372	0.291	0.224	0.218
Molybdenum	0.1	<	<	<	<	<	<
Nickel	0.1	0.500	1.61	1.33	0.226	0.473	0.393
Selenium	1	<	<	<	<	<	<
Silver	0.1	<	<	<	<	<	<
Thallium	0.05	<	<	0.892	<	<	<
Vanadium	0.1	<	0.538	0.750	<	<	<
Zinc	3	4.82	7.26	7.98	<	3.85	3.59

ALS Environmental

Sample Analysis Summary Report

Sample Name		21-22085-PM-(37 THRU 42) TEST#3 APC OUTLET#2	21-22085-PM-(43 THRU 48) BLANK2
ALS Sample ID		L2668823-7	L2668823-8
Matrix		Stack	Stack
Analysis Type		Sample	Sample
Sampling Date		1-Dec-21	30-Nov-21
Date of Receipt		3-Dec-21	1-Dec-21
Multi-Metals via ICP-MS	**LOR ug**	**ug**	**ug**
Back Half (HNO3 / H2O2) Fraction 2A			
Antimony	0.1	<	<
Arsenic	0.2	<	<
Barium	0.5	0.670	0.589
Beryllium	0.1	<	<
Cadmium	0.05	0.0632	<
Chromium	0.15	0.445	0.275
Cobalt	0.1	<	<
Copper	0.3	2.24	1.88
Lead	0.05	0.506	0.146
Molybdenum	0.1	<	<
Nickel	0.1	1.87	0.195
Selenium	1	<	<
Silver	0.1	<	<
Thallium	0.05	<	<
Vanadium	0.1	<	<
Zinc	3	7.16	<

ALS Environmental

Sample QC Summary Report

Sample Name		RB	LCS	LCS	LCSD	LCSD
ALS Sample ID		RB	LCS	LCS	LCSD	LCSD
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis Type		Blank	LCS	LCS	LCS	LCS
Sampling Date		n/a	n/a	n/a	n/a	n/a
Date of Receipt		n/a	n/a	n/a	n/a	n/a
Multi-Metals via ICP-MS	**LOR**					
	ug	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Back Half (HNO3 / H2O2) Fraction 2A						
Antimony	0.1	<	5.23	87	5.21	87
Arsenic	0.2	<	26.7	89	26.9	90
Barium	0.5	<	24.8	83	26.5	88
Beryllium	0.1	<	26.9	90	27.6	92
Cadmium	0.05	<	13.7	91	14.3	95
Chromium	0.15	<	27.4	91	27.6	92
Cobalt	0.1	<	26.8	89	27.2	91
Copper	0.3	<	27.6	92	28.0	93
Lead	0.05	<	27.3	91	27.3	91
Molybdenum	0.1	<	13.2	88	13.1	88
Nickel	0.1	<	27.9	93	28.2	94
Selenium	1	<	24.7	82	25.7	86
Silver	0.1	<	12.9	86	12.8	85
Thallium	0.05	<	27.9	93	27.9	93
Vanadium	0.1	<	27.4	91	27.7	92
Zinc	3	<	53.2	88	53.3	89

ALS Environmental

Sample QC Summary Report

Sample Name		21-22085-PM-(1 THRU 6) TEST#1 APC OUTLET#1	21-22085-PM-(1 THRU 6) TEST#1 APC OUTLET#1	21-22085-PM-(1 THRU 6) TEST#1 APC OUTLET#1	21-22085-PM-(1 THRU 6) TEST#1 APC OUTLET#1	21-22085-PM-(1 THRU 6) TEST#1 APC OUTLET#1	21-22085-PM-(1 THRU 6) TEST#1 APC OUTLET#1
ALS Sample ID		L2668823-1	L2668823-1	MS	MS	MSD	MSD
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis Type		Sample	Duplicate	Matrix Spike	Matrix Spike	Matrix Spike Dup	Matrix Spike Dup
Sampling Date		29-Nov-21	29-Nov-21	29-Nov-21	29-Nov-21	29-Nov-21	29-Nov-21
Date of Receipt		1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21	1-Dec-21
Multi-Metals via ICP-MS	**LOR**						
	ug	**ug**	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Back Half (HNO3 / H2O2) Fraction 2A							
Antimony	0.1	<	<	10.7	89	10.9	91
Arsenic	0.2	<	<	55.7	93	55.8	93
Barium	0.5	1.04	1.02	54.4	89	58.4	96
Beryllium	0.1	<	<	57.4	96	57.5	96
Cadmium	0.05	<	<	29.6	99	29.7	99
Chromium	0.15	0.469	0.462	58.6	97	58.3	96
Cobalt	0.1	0.148	0.147	57.5	96	57.4	95
Copper	0.3	4.19	4.16	63.4	99	63.2	98
Lead	0.05	0.562	0.563	57.5	95	58.7	97
Molybdenum	0.1	<	<	27.7	92	27.7	92
Nickel	0.1	0.500	0.532	60.2	99	59.9	99
Selenium	1	<	<	52.0	87	52.6	88
Silver	0.1	<	<	26.8	89	27.1	90
Thallium	0.05	<	<	55.8	93	59.2	99
Vanadium	0.1	<	<	58.6	98	58.2	97
Zinc	3	4.82	4.69	117	94	117	93

APPENDIX 13

Particle Size Distribution Train Recovery Data Sheets
(8 pages)

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22085
Date: NOV 30/21

Test No.: 1
Test Location: UNIT 1

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4
			Filter ID: 828372
			Colour: WHITE
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Seal and label container TS4

SAMPLE IDENTIFICATION	21-22085-M201A-
TS1 (Part. > 10)	1
TS2 (Part. > 2.5)	2
TS3 (Part. < 2.5)	3
TS4 (Back Up Filter, <2.5)	4
TS5 (Imp 2 H_2O and rinse)	5
TS6 (Secondary Filter)	6
TS7 (Acetone / Hexane rinse)	7

Train Loaded By: DT/DU
Train Recovered By: DU/DT

Impingers 1, 2, 3, 4

	Impinger #1 Knock Out	
	Empty Wt:	516.0
	Final Wt:	673.0
1	Gain:	157.0
	Colour:	clear

	Impinger #2 Empty	
	Empty Wt:	560.6
	Final Wt:	560.2
2	Gain:	-0.4
	Colour:	clear

Secondary Filter

	Impinger #3 H_2O	
	Empty Wt:	665.0
	Initial Wt:	767.7
	Final Wt:	766.5
3	Gain:	-1.2
	Colour:	

	Impinger #4 Silica Gel	
	Initial Wt:	930.3
	Final Wt:	939.3
4	Gain:	9.0
	% Spent:	

CONTAINER TS5 & TS6

Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)
** if there is no gain purge is not required.*

Purge On: 10:50
Purge Off: 11:50

Rinse all glassware from filter to front half 2nd filter with di H2O into TS5

CONTAINER TS5
Mark Fluid Level and Seal and Label Container

CONTAINER TS6
Secondary Filter

Seal and label container TS6

CONTAINER TS7

Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7

Acetone/Hexane Rinse

Mark Fluid Level and Seal and Label Container

CWTR=1+2+3:	155.4
WCBDA=4:	9.0

5

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22085
Date: NOV 30/21

Test No.: 2
Test Location: U1

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter	Impingers 1, 2, 3, 4	CONTAINER TSS & TS6	CONTAINER TS7
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	Impinger #1 Knock Out Empty Wt: 489.6 Final Wt: 638.7 1 Gain: 151.1 Colour: clean	Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr) * *if there is no gain purge is not required.*	Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7
			Filter ID: Q28375 Colour: WHITE			Acetone/Hexane Rinse
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Seal and label container TS4	Impinger #2 Empty Empty Wt: 577.7 Final Wt: 578.7 2 Gain: 1.0 Colour: clean	Purge On: 13:55 Purge Off: 14:55	Mark Fluid Level and Seal and Label Container
				Secondary Filter	Rinse all glassware from filter to front half 2nd filter with di H2O into TS5	
				Impinger #3 H_2O Empty Wt: 659.7 Initial Wt: 726.9 Final Wt: 725.7 3 Gain: -1.2 Colour: clean	CONTAINER TS5 Mark Fluid Level and Seal and Label Container	
					CONTAINER TS6 Secondary Filter	11
				Impinger #4 Silica Gel Initial Wt: 971.6 Final Wt: 980.7 4 Gain: 9.6 % Spent:	Seal and label container TS6	

SAMPLE IDENTIFICATION	21-22085-M201A-
TS1 (Part. > 10)	8
TS2 (Part. > 2.5)	9
TS3 (Part. < 2.5)	10
TS4 (Back Up Filter, <2.5)	11
TS5 (Imp 2 H_2O and rinse)	12
TS6 (Secondary Filter)	13
TS7 (Acetone / Hexane rinse)	14

CWTR=1+2+3:	150.9
WCBDA=4:	9.6

Train Loaded By: DT
Train Recovered By: DU/DT

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22085
Date: NOV 30, 21

Test No.: 3
Test Location: U 1

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4
			Filter ID: HZ8376
			Colour: WH ITG
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Seal and label container TS4

SAMPLE IDENTIFICATION	21-22085-M201A-
TS1 (Part. > 10)	15
TS2 (Part. > 2.5)	16
TS3 (Part. < 2.5)	17
TS4 (Back Up Filter, <2.5)	18
TS5 (Imp 2 H_2O and rinse)	19
TS6 (Secondary Filter)	20
TS7 (Acetone / Hexane rinse)	21

Train Loaded By: DT/DU
Train Recovered By:

Impingers 1, 2, 3, 4

	Impinger #1 Knock Out	
	Empty Wt:	516.0
	Final Wt:	689.7
1	Gain:	173.7
	Colour:	Clear

	Impinger #2 Empty	
	Empty Wt:	560.6
	Final Wt:	560.3
2	Gain:	-0.3
	Colour:	—

Secondary Filter

	Impinger #3 H_2O	
	Empty Wt:	665.0
	Initial Wt:	766.5
	Final Wt:	765.7
3	Gain:	-0.8
	Colour:	Clear

	Impinger #4 Silica Gel	
	Initial Wt:	939.3
	Final Wt:	949.0
4	Gain:	9.7
	% Spent:	

CONTAINER TS5 & TS6

Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)
** if there is no gain purge is not required.*

Purge On: 17:00
Purge Off: 18:00

Rinse all glassware from filter to front half 2nd filter with di H2O into TS5

CONTAINER TS5
Mark Fluid Level and Seal and Label Container

CONTAINER TS6
Secondary Filter

Seal and label container TS6

CONTAINER TS7

Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7

Acetone/Hexane Rinse

Mark Fluid Level and Seal and Label Container

CWTR=1+2+3: 172.6
WCBDA=4: 9.7

5

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22085
Date: NOV 30, 21

Test No.: BLANK 1
Test Location:

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter	Impingers 1, 2, 3, 4	CONTAINER TS5 & TS6	CONTAINER TS7
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	Impinger #1 Knock Out Empty Wt: Final Wt: 1 Gain: Colour:	Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr) ** if there is no gain purge is nat required.*	Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7
			Filter ID: QZ83773 Colour: WHITE			Acetone/Hexane Rinse
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Seal and label container TS4	Impinger #2 Empty Empty Wt: Final Wt: 2 Gain: Colour:	Purge On: Purge Off:	Mark Fluid Level and Seal and Label Container
				Secondary Filter	Rinse all glassware from filter to front half 2nd filter with di H2O into TS5	
				Impinger #3 H_2O Empty Wt: Initial Wt: Final Wt: 3 Gain: Colour:	CONTAINER TS5 Mark Fluid Level and Seal and Label Container	
					CONTAINER TS6 Secondary Filter	
				Impinger #4 Silica Gel Initial Wt: Final Wt: 4 Gain: % Spent:	Seal and label container TS6	CWTR=1+2+3: WCBDA=4:

SAMPLE IDENTIFICATION	21-22085-M201A-
TS1 (Part. > 10)	43
TS2 (Part. > 2.5)	44
TS3 (Part. < 2.5)	45
TS4 (Back Up Filter, <2.5)	46
TS5 (Imp 2 H_2O and rinse)	47
TS6 (Secondary Filter)	48
TS7 (Acetone / Hexane rinse)	49

Train Loaded By:
Train Recovered By:

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PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22085
Date: NOV 29, 21

Test No.: 1
Test Location: U2

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Filter ID: 228369 Colour: WHITE Seal and label container TS4

SAMPLE IDENTIFICATION	21-22085-M201A-
TS1 (Part. > 10)	4 22
TS2 (Part. > 2.5)	2 23
TS3 (Part. < 2.5)	3 24
TS4 (Back Up Filter, <2.5)	1 25
TS5 (Imp 2 H_2O and rinse)	5 26
TS6 (Secondary Filter)	6 27
TS7 (Acetone / Hexane rinse)	7 28

Train Loaded By: DT/DH
Train Recovered By: DH/DT

Impingers 1, 2, 3, 4

	Impinger #1 Knock Out	
	Empty Wt:	487.6
	Final Wt:	632.0
1	Gain:	144.4
	Colour:	Green

	Impinger #2 Empty	
	Empty Wt:	575.1
	Final Wt:	579.3
2	Gain:	4.2
	Colour:	CLEAR

Secondary Filter

	Impinger #3 H_2O	
	Empty Wt:	659.7
	Initial Wt:	729.2
	Final Wt:	729.7
3	Gain:	0.5
	Colour:	Clear

	Impinger #4 Silica Gel	
	Initial Wt:	942.6
	Final Wt:	959.1
4	Gain:	16.5
	% Spent:	

CONTAINER TS5 & TS6

Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)
** if there is no gain purge is not required.*

Purge On: 12:40
Purge Off: 13:40

Rinse all glassware from filter to front half 2nd filter with di H_2O into TS5

CONTAINER TS5
Mark Fluid Level and Seal and Label Container

CONTAINER TS6
Secondary Filter

Seal and label container TS6

CONTAINER T57

Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7

Acetone/Hexane Rinse

Mark Fluid Level and Seal and Label Container

CWTR=1+2+3:	149.1
WCBDA=4:	16.5

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ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22085
Date: NOV 29, 21

Test No.: 2
Test Location: 4 2

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter	Impingers 1, 2, 3, 4	CONTAINER TS5 & TS6	CONTAINER TS7
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	Impinger #1 Knock Out Empty Wt: 516.1 Final Wt: 650.0 1 Gain: 133.9 Colour: clear	Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr) ** if there is no gain purge is not required.*	Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7
			Filter ID: QZ8370 Colour: WHITE			Acetone/Hexane Rinse
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container T52	Mark Fluid Level and Seal and label container TS3	Seal and label container TS4	Impinger #2 Empty Empty Wt: 560.6 Final Wt: 571.6 2 Gain: 11.0 Colour: clear	Purge On: 16:00 Purge Off: 17:00	Mark Fluid Level and Seal and Label Container
				Secondary Filter	Rinse all glassware from filter to front half 2nd filter with di H2O into TS5	
				Impinger #3 H_2O Empty Wt: 665.0 Initial Wt: 766.5 Final Wt: 767.7 3 Gain: 1.2 Colour: clear	CONTAINER TS5 Mark Fluid Level and Seal and Label Container	
					CONTAINER TS6 Secondary Filter	5
				Impinger #4 Silica Gel Initial Wt: 919.5 Final Wt: 930.3 4 Gain: 10.8 % Spent:	Seal and label container TS6	

SAMPLE IDENTIFICATION	21-22085-M201A-
TS1 (Part. > 10)	29
TS2 (Part. > 2.5)	30
TS3 (Part. < 2.5)	31
TS4 (Back Up Filter, <2.5)	32
TS5 (Imp 2 H_2O and rinse)	33
TS6 (Secondary Filter)	34
TS7 (Acetone / Hexane rinse)	35

CWTR=1+2+3:	146.1
WCBDA=4:	10.8

Train Loaded By: DT
Train Recovered By: DT/JM

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22085
Date: Nov 29, 21

Test No.: 3
Test Location: U2

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.5 Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4
			Filter ID: QZ8371
			Colour: WHITE
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Seal and label container TS4

SAMPLE IDENTIFICATION	21-22085-M201A-
TS1 (Part. > 10)	36
TS2 (Part. > 2.5)	37
TS3 (Part. < 2.5)	38
TS4 (Back Up Filter, <2.5)	39
TS5 (Imp 2 H_20 and rinse)	40
TS6 (Secondary Filter)	41
TS7 (Acetone / Hexane rinse)	42

Train Loaded By: ST/BU
Train Recovered By: ST/BU

Impingers 1, 2, 3, 4

Impinger #1 Knock Out	
Empty Wt:	487.6
Final Wt:	646.6
1 Gain:	159.0
Colour:	Clear

Impinger #2 Empty	
Empty Wt:	577.7
Final Wt:	579.0
2 Gain:	1.3
Colour:	Clear

Secondary Filter

Impinger #3 H_2O	
Empty Wt:	657.7
Initial Wt:	729.7
Final Wt:	726.9
3 Gain:	-2.8
Colour:	Clear

Impinger #4 Silica Gel	
Initial Wt:	959.1
Final Wt:	971.1
4 Gain:	12.0
% Spent:	

CONTAINER TS5 & TS6

Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)
** if there is no gain purge is not required.*

Purge On: 18:45
Purge Off: 19:45

Rinse all glassware from filter to front half 2nd filter with di H2O into TS5

CONTAINER TS5
Mark Fluid Level and Seal and Label Container

CONTAINER TS6
Secondary Filter

Seal and label container TS6

CONTAINER TS7

Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7

Acetone/Hexane Rinse

Mark Fluid Level and Seal and Label Container

CWTR=1+2+3:	157.5
WCBDA=4:	12.0

ORTECH Consulting Inc.

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 22085
Date: NOV 30/21

Test No.: BLANK 2
Test Location:

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem	PM 10 Turnaround cup, exit stem, connecting tubing from, PM 10 head to PM 2.5 cyclone. PM 2.S Cyclone walls, collection cup, and outside of exit stem	Exit Stem, and Connecting Tubing to Filter, and Filter Top	Back-Up Filter
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4
			Filter ID: BZ8374
			Colour: WHITE
Mark Fluid Level and Seal and label container TS1	Mark Fluid Level and Seal and label container TS2	Mark Fluid Level and Seal and label container TS3	Seal and label container TS4

SAMPLE IDENTIFICATION	21-22085-M201A-
TS1 (Part. > 10)	50
TS2 (Part. > 2.5)	51
TS3 (Part. < 2.5)	52
TS4 (Back Up Filter, <2.5)	53
TS5 (Imp 2 H_20 and rinse)	54
TS6 (Secondary Filter)	55
TS7 (Acetone / Hexane rinse)	56

Train Loaded By: DY
Train Recovered By:

Impingers 1, 2, 3, 4		CONTAINER TS5 & TS6	CONTAINER TS7
Impinger #1 Knock Out		Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)	Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7
Empty Wt:		* *if there is no gain purge is not required.*	
Final Wt:			
Gain:	1		
Colour:			Acetone/Hexane Rinse
Impinger #2 Empty		Purge On:	
Empty Wt:		Purge Off:	
Final Wt:			Mark Fluid Level and Seal and Label Container
Gain:	2	Rinse all glassware from filter to front half 2nd filter with di H2O into TS5	
Colour:			
Secondary Filter			
Impinger #3 H_2O		CONTAINER TS5	
Empty Wt:		Mark Fluid Level and Seal and Label Container	
Initial Wt:			
Final Wt:			
Gain:	3		
Colour:		CONTAINER TS6	
		Secondary Filter	
Impinger #4 Silica Gel			
Initial Wt:		Seal and label container TS6	
Final Wt:			
Gain:	4		CWTR=1+2+3:
% Spent:			WCBDA=4:

APPENDIX 14

SVOC Train Recovery Data Sheets
(8 pages)

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22085
Sample Batch No.: 21-22085-SVOC-

Test No.: 1
Test Date: DEC 1, 21
Test Location: U1

Sample ID 1	Sample ID 2	Sample ID 3	Sample ID 4	Sample ID 5	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	
Empty Wt: 408.2	Colour: WHITE	Initial Wt: 384.6	Impinger #1 Empty	Empty Wt: 408.0	Initial Wt: 932.0
After Acetone/ Hexane Rinse: 669.5	FOLD IN FOIL	1 Final Wt: 391.3	Empty Wt: 654.0	After Acetone/ Hexane Rinse: 638.4	Final Wt: 948.9
Total TS1: 261.3	SEAL AND LABEL CONTAINER TS2	Gain: 6.7	Final Wt: 960.0	Total TS5: 230.4	5 Gain: 16.9
		Colour: WHITE	2 Gain: 306.0		% Spent:
		SEAL TRAP	Colour: clear	SEAL AND LABEL TS5	
MARK FLUID LEVEL SEAL AND LABEL CONTAINER TS1		WRAP IN FOIL	Impinger #2 Ethylene Glycol		
		LABEL AS CONTAINER TS3	Empty Wt: 639.2		
			Initial Wt: 741.3		
			Final Wt: 925.4		
			3 Gain: 184.1		
			Colour: clear		
			Impinger #3 Empty		
			Empty Wt: 501.4		
			Final Wt: 625.1		
			4 Gain: 123.7		
			Colour: clear		
			Container TS4 Weights		
			Empty Wt: 406.9		
			With Imp Soln: 1107.5		
			After ~100g H_2O Rinse: 1204.5		
			Total TS4: 797.6		
			SEAL AND LABEL TS4		

CWTR = 1 + 2 + 3 + 4: 620.5 ✓
WCBDA=5: 16.9

Impinger Box ID: 10

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	
Trap ID:	3
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	212170
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: DT
Train Recovered By: DT

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22085
Sample Batch No.: 21-22085-SVOC-

Test No.: 2
Test Date: DEC 1, 21
Test Location: UNIT #1

Sample ID 6	Sample ID 7	Sample ID 8	Sample ID 9	Sample ID 10	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	
Empty Wt: 709.0 After Acetone/ Hexane Rinse: 665.5 Total TS1:	Colour: WHITE FOLD IN FOIL SEAL AND LABEL CONTAINER TS2	Initial Wt: 355.4 Final Wt: 361.5 1 Gain: 6.1 Colour: WHITE SEAL TRAP WRAP IN FOIL LABEL AS CONTAINER TS3	Impinger #1 Empty Empty Wt: 677.3 Final Wt: 1035.0 2 Gain: 357.8 Colour: clear Impinger #2 Ethylene Glycol Empty Wt: 663.6 Initial Wt: 765.6 Final Wt: 1002.5 3 Gain: ~~238.9~~ 236.9 Colour: clear Impinger #3 Empty Empty Wt: 600.8 Final Wt: 631.5 4 Gain: 30.7 Colour: clear Container TS4 Weights Empty Wt: 407.1 With Imp Soln: 1170.7 After ~100g H_2O Rinse: 1255.5 Total TS4: 848.4 SEAL AND LABEL TS4	Empty Wt: 407.7 After Acetone/ Hexane Rinse: 562.5 Total TS5: 154.8 SEAL AND LABEL TS5 CWTR = 1 + 2 + 3 + 4: ~~785.5~~ 681.5 WCBDA=5: 19.0 Impinger Box ID: 13	5 Initial Wt: 941.2 Final Wt: 960.2 Gain: 19.0 % Spent:
MARK FLUID LEVEL SEAL AND LABEL CONTAINER TS1					

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	
Trap ID:	1
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By:
Train Recovered By:

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22085
Sample Batch No.: 21-22085-SVOC-

Test No.: 3
Test Date: DEC 2/21
Test Location: UNIT #1

Sample ID 11	Sample ID 12	Sample ID 13	Sample ID 14	Sample ID 15	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	
Empty Wt: 409.0 After Acetone/ Hexane Rinse: 631.0 Total TS1: 224.0	Colour: WHITE FOLD IN FOIL SEAL AND LABEL CONTAINER TS2	Initial Wt: 410.0 Final Wt: 417.9 1 Gain: 7.9 Colour: WHITE SEAL TRAP WRAP IN FOIL LABEL A5 CONTAINER TS3	Impinger #1 Empty Empty Wt: 555.6 Final Wt: 946.0 2 Gain: 390.4 Colour: clear Impinger #2 Ethylene Glycol Empty Wt: 658.9 Initial Wt: 760.3 Final Wt: 980.5 3 Gain: 220.2 Colour: clear Impinger #3 Empty Empty Wt: 597.1 Final Wt: 598.8 4 Gain: 1.7 Colour: clear Container TS4 Weights Empty Wt: 407.5 With Imp Soln: 1109.0 After ~100g H_2O Rinse: 1229.5 Total TS4: 821.0 SEAL AND LABEL TS4	Empty Wt: 407.0 After Acetone/ Hexane Rinse: 563.6 Total TS5: 156.6 SEAL AND LABEL TS5 CWTR = 1 + 2 + 3 + 4: 620.2 WCBDA=5: 17.2 Impinger Box ID: 6	5 Initial Wt: 919.5 Final Wt: 936.7 Gain: 17.2 % Spent:
MARK FLUID LEVEL SEAL AND LABEL CONTAINER TS1					

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	
Trap ID:	2
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By:
Train Recovered By: DT

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22085
Sample Batch No.: 21-22085-SVOC-

Test No.: BLANK 1
Test Date: DEC 2/21
Test Location:

Sample ID 16	Sample ID 17	Sample ID 18	Sample ID 19	Sample ID 20	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	
Empty Wt: 406.5	Colour: WHITE	Initial Wt: 370.8	Impinger #1 Empty	Empty Wt: 401.0	Initial Wt:
After Acetone/ Hexane Rinse: 586.2	FOLD IN FOIL	1 Final Wt: 370.8	Empty Wt: 665.7	After Acetone/ Hexane Rinse: 618.9	Final Wt:
Total TS1:		Gain:	Final Wt: 665.7	5 Total TS5:	5 Gain:
	SEAL AND LABEL CONTAINER TS2	Colour: WHITE	2 Gain:		% Spent:
MARK FLUID LEVEL		SEAL TRAP	Colour:	SEAL AND LABEL TS5	
SEAL AND LABEL CONTAINER TS1		WRAP IN FOIL	Impinger #2 Ethylene Glycol		
		LABEL AS CONTAINER TS3	Empty Wt: 668.8		
			Initial Wt: 768.4		
			Final Wt: 768.4		
			3 Gain:		
			Colour:		
			Impinger #3 Empty		
			Empty Wt: 597.8		
			Final Wt: 597.8		
			4 Gain:		
			Colour:		
			Container TS4 Weights		
			Empty Wt: 408.0		
			With Imp Soln: 507.3		
			After ~100g H_2O Rinse: 613.3		
			Total TS4:		
			SEAL AND LABEL TS4		

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	
Trap ID:	5
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

CWTR = 1 + 2 + 3 + 4:	
WCBDA=5:	

Impinger Box ID:

Train Loaded By:
Train Recovered By: AT

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22085
Sample Batch No.: 21-22085-SVOC-

Test No.: 1
Test Date: DEC. 9, 2021
Test Location: APC UNIT # 2

Sample ID -21	Sample ID -22	Sample ID -23	Sample ID -24	Sample ID -25	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	
Empty Wt: 404.5	Colour: WHITE	Initial Wt: 370.2	Impinger #1 Empty	Empty Wt: 406.3	Initial Wt: 966.5
After Acetone/ Hexane Rinse: 721.7	FOLD IN FOIL	Final Wt: 381.4	Empty Wt: 625.3	After Acetone/ Hexane Rinse: 612.6	Final Wt: 981.2
Total TS1: 317.2	SEAL AND LABEL CONTAINER TS2	1 Gain: 11.2	Final Wt: 966.6	Total TS5: 206.3	5 Gain: 14.7
MARK FLUID LEVEL		Colour: white	2 Gain: 341.3	SEAL AND LABEL TS5	% Spent: 59 %
SEAL AND LABEL CONTAINER TS1		SEAL TRAP	Colour: clear		
		WRAP IN FOIL	Impinger #2 Ethylene Glycol		
		LABEL AS CONTAINER TS3	Empty Wt: 651.4		
			Initial Wt: 788.7		
			Final Wt: 973.3		
			3 Gain: 184.6		
			Colour: clear		
			Impinger #3 Empty		
			Empty Wt: 477.7		
			Final Wt: 681.7		
			4 Gain: 194.0		
			Colour: clear		
			Container TS4 Weights		
			Empty Wt: 400.1		
			With Imp Soln: 1156.7		
			After ~100g H_2O Rinse: 1255.4		
			Total TS4: 98.7		
			SEAL AND LABEL TS4		

CWTR = 1 + 2 + 3 + 4: 641.1 ✓
WCBDA=5: 14.7

Impinger Box ID: 13

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	
Trap ID:	10
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	lot # 212179
Hexane Batch No.:	lot # 165965
Acetone Batch No.:	lot # 106439

Train Loaded By: AU/DT
Train Recovered By: CB

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client :	Covanta DYEC
Project No.:	22085
Sample Batch No.:	21-22085-SVOC-

Test No.:	2
Test Date:	DEC. 9, 2021
Test Location:	APC UNIT # 2

Sample ID ~26	Sample ID ~27	Sample ID ~28	Sample ID ~29	Sample ID ~30
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5
Empty Wt: 404.6	Colour: white	Initial Wt: 408.5	Impinger #1 Empty	Empty Wt: 407.4
After Acetone/ Hexane Rinse: 835.9	FOLD IN FOIL	Final Wt: 415.5	Empty Wt: 522.6	After Acetone/ Hexane Rinse: 638.0
Total TS1: 431.3	SEAL AND LABEL CONTAINER TS2	1 Gain: 7.0	Final Wt: 910.3 ✓	Total TS5: 230.6
MARK FLUID LEVEL		Colour: white	2 Gain: 387.7	SEAL AND LABEL TS5
SEAL AND LABEL CONTAINER TS1		SEAL TRAP	Colour: clear	
		WRAP IN FOIL	Impinger #2 Ethylene Glycol	
		LABEL AS CONTAINER TS3	Empty Wt: 545.3	
			Initial Wt: 645.9	
			Final Wt: 889.3 ✓	
			3 Gain: 243.4	
			Colour: clear	
			Impinger #3 Empty	
			Empty Wt: 531.7	
			Final Wt: 532.1	
			4 Gain: 0.4	
			Colour: clear	
			Container TS4 Weights	
			Empty Wt: 406.5	
			With Imp Soln: 1185.3	
			After ~100g H_2O Rinse: 1260.4	
			Total TS4: 853.9	
			SEAL AND LABEL TS4	

Impinger 4 Silica Gel	
Initial Wt:	867.4
Final Wt:	885.0
5 Gain:	17.6
% Spent:	4.0 %

CWTR = 1 + 2 + 3 + 4:	638.5 ✓
WCBDA=5:	17.6

Impinger Box ID: 2

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	
Trap ID:	7
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	lot # 212170
Hexane Batch No.:	lot # 195965
Acetone Batch No.:	lot # 196439

Train Loaded By: DT

Train Recovered By: CB.

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22085
Sample Batch No.: 21-22085-SVOC-

Test No.: 3
Test Date: DEC. 10, 2021
Test Location: APC UNIT #2

Sample ID	Sample ID	Sample ID	Sample ID	Sample ID
-31	-32	-33	-34	-35
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap 12	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5
Empty Wt: 404.9	Colour: WHITE	Initial Wt: 361.0	Impinger #1 Empty	Empty Wt: 405.9
After Acetone/ Hexane Rinse: 743.0	FOLD IN FOIL	Final Wt: 369.0	Empty Wt: 650.4	After Acetone/ Hexane Rinse: 721.6
Total TS1: 338.1	SEAL AND LABEL CONTAINER TS2	1 Gain: 8.0	Final Wt: 966.1	5 Total TS5: 315.7
MARK FLUID LEVEL		Colour: WHITE	2 Gain: 315.7	SEAL AND LABEL TS5
SEAL AND LABEL CONTAINER TS1		SEAL TRAP	Colour: clear	
		WRAP IN FOIL	Impinger #2 Ethylene Glycol	
		LABEL AS CONTAINER TS3	Empty Wt: 656.2	
			Initial Wt: 740.0	
			Final Wt: 924.0	
			3 Gain: 184.0	
			Colour: clear	
			Impinger #3 Empty	
			Empty Wt: 672.7	
			Final Wt: 759.7	
			4 Gain: 147.0	
			Colour: clear	
			Container TS4 Weights	
			Empty Wt: 405.8	
			With Imp Soln: 1120.8	
			After ~100g H_2O Rinse: 1277.5	
			Total TS4: 871.7	
			SEAL AND LABEL TS4	

Impinger 4 Silica Gel	
Initial Wt:	959.7
Final Wt:	977.9
5 Gain:	18.2
% Spent:	40 %

CWTR = 1 + 2 + 3 + 4:	654.7 ✓
WCBDA=5:	18.2

Impinger Box ID: 10

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	
Trap ID:	R
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	212170
Hexane Batch No.:	1059625
Acetone Batch No.:	196439

Train Loaded By: DT
Train Recovered By: CB.

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

ORTECH Consulting Inc.
Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 22085
Sample Batch No.: 21-22085-SVOC-

Test No.: Blank #2
Test Date: DEC. 10, 2021
Test Location: APC unit #2

Sample ID	Sample ID	Sample ID	Sample ID	Sample ID	
-31	-32	-33	-34	-35	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	
Empty Wt: 407.7	Colour: WHITE	Initial Wt: 343.5	**Impinger #1 Empty**	Empty Wt: 404.8	Initial Wt: 944.3
After Acetone/ Hexane Rinse: 636.2	FOLD IN FOIL	1 Final Wt: 342.4	Empty Wt: 686.5	After Acetone/ Hexane Rinse: 669.8	Final Wt: 944.8
Total TS1: 228.5	SEAL AND LABEL CONTAINER TS2	Gain: -1.1	Final Wt: 692.1	5 Total TS5: 265.0	5 Gain: 0.5
		Colour: white	2 Gain: 5.6	SEAL AND LABEL TS5	% Spent: —
MARK FLUID LEVEL SEAL AND LABEL CONTAINER TS1		SEAL TRAP	Colour: empty		
		WRAP IN FOIL	**Impinger #2 Ethylene Glycol**		
		LABEL AS CONTAINER TS3	Empty Wt: 654.9		
			Initial Wt: 754.0		
			Final Wt: 748.3		
			3 Gain: -5.7	CWTR = 1 + 2 + 3 + 4: -1.2	
			Colour: clear	WCBDA=5: 0.5	
			Impinger #3 Empty		
			Empty Wt: 498.2		
			Final Wt: 498.2		
			4 Gain: 0.0	Impinger Box ID: 12	
			Colour: empty		
			Container TS4 Weights		
			Empty Wt: 403.7		
			With Imp Soln: 492.0		
			After ~100g H_2O Rinse: 664.0		
			Total TS4: 260.3		
			SEAL AND LABEL TS4		

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	
Trap ID:	9
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: DS
Train Recovered By: CB

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

APPENDIX 15

SVOC Analytical Report
(95 pages)

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2669132		Mississauga, ON
Date of Report	20-Dec-21		L5J 2Y4
Date of Sample Receipt	03-Dec-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS: **PCDD/F by EPA M23**

A high bias on the LCS for the target 1,2,3,7,8,9-HxCDD indicates that these values may be biased high in the samples.
If the sample data are so impacted then the TEQ results may be biased high by ~3% due to contribution for this congener.

Certified by:

Ron McLeod, PhD
Director, Air Toxics & Special Chemistries, Life Sciences

Results in this certificate relate only to the samples as submitted to the laboratory.
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Sample Analysis summary Report

Sample Name	21-22085-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1	21-22085-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1	21-22085-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1	21-22085-SVOC-(16 THRU 20) BLANK1
ALS Sample ID	L2669132-1	L2669132-2	L2669132-3	L2669132-4
Sample Size	1	1	1	1
Sample size units	sample	sample	sample	sample
Percent Moisture	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack
Sampling Date	1-Dec-21	1-Dec-21	2-Dec-21	2-Dec-21
Extraction Date	14-Dec-21	14-Dec-21	14-Dec-21	14-Dec-21
Target Analytes	**pg**	**pg**	**pg**	**pg**
2,3,7,8-TCDD	<2.3	<1.2	<1.5	<0.92
1,2,3,7,8-PeCDD	9.51	12.7	9.34	<0.72
1,2,3,4,7,8-HxCDD	<43	<67	57.0	<1.1
1,2,3,6,7,8-HxCDD	104	157	113	<0.89
1,2,3,7,8,9-HxCDD	68.0	89.1	<45	<0.94
1,2,3,4,6,7,8-HpCDD	1630	2470	1600	<5.3
OCDD	1700	2360	1630	<12
2,3,7,8-TCDF	6.25	<3.5	<2.8	<0.66
1,2,3,7,8-PeCDF	11.7	<10	<6.0	<1.3
2,3,4,7,8-PeCDF	<16	26.1	<20	<0.48
1,2,3,4,7,8-HxCDF	<37	62.6	40.0	<0.79
1,2,3,6,7,8-HxCDF	<31	<52	<35	<0.64
2,3,4,6,7,8-HxCDF	72.0	103	73.5	<0.72
1,2,3,7,8,9-HxCDF	23.2	<31	<3.4	<1.9
1,2,3,4,6,7,8-HpCDF	373	550	388	<1.9
1,2,3,4,7,8,9-HpCDF	57.9	75.7	<37	<1.2
OCDF	216	330	218	<1.6
Field Spike Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	98	100	101	100
13C12-1,2,3,4,7,8-HxCDD	108	104	134	98
13C12-2,3,4,7,8-PeCDF	102	97	103	101
13C12-1,2,3,4,7,8-HxCDF	107	105	113	108
13C12-1,2,3,4,7,8,9-HpCDF	97	89	89	96
Extraction Standards				
13C12-2,3,7,8-TCDD	78	63	79	71
13C12-1,2,3,7,8-PeCDD	80	64	85	72
13C12-1,2,3,6,7,8-HxCDD	69	53	85	75
13C12-1,2,3,4,6,7,8-HpCDD	60	47	70	65
13C12-OCDD	66	45	73	63
13C12-2,3,7,8-TCDF	81	65	84	73
13C12-1,2,3,7,8-PeCDF	77	64	80	71
13C12-1,2,3,6,7,8-HxCDF	74	59	91	86
13C12-1,2,3,4,6,7,8-HpCDF	63	52	80	66
Cleanup Standard				
13C12-1,2,3,7,8,9-HxCDF	68	65	92	78
Homologue Group Totals	**pg**	**pg**	**pg**	**pg**
Total-TCDD	344	492	366	<0.92
Total-PeCDD	738	894	695	<0.72
Total-HxCDD	3100	4510	3200	<1.1
Total-HpCDD	3590	5430	3550	<2.1
Total-TCDF	154	184	143	<0.66
Total-PeCDF	222	259	145	<0.54
Total-HxCDF	436	767	507	<0.89
Total-HpCDF	645	915	497	<1.2
Toxic Equivalency - (WHO 2005)				
Lower Bound PCDD/F TEQ (WHO 2005)	58.4	93.5	58.1	0.00
Mid Point PCDD/F TEQ (WHO 2005)	75.4	110	73.9	1.49
Upper Bound PCDD/F TEQ (WHO 2005)	76.6	110	74.8	2.68

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Quality Control Summary Report

Sample Name	Media Blank	Laboratory Control Sample
ALS Sample ID	WG3669684-1	WG3669684-2
Sample Size	1	1
Sample size units	sample	n/a
Percent Moisture	n/a	n/a
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	14-Dec-21	14-Dec-21
Target Analytes	**pg**	**% Rec**
2,3,7,8-TCDD	<1.8	97
1,2,3,7,8-PeCDD	<1.1	109
1,2,3,4,7,8-HxCDD	<3.0	115
1,2,3,6,7,8-HxCDD	<2.3	116
1,2,3,7,8,9-HxCDD	<2.5	149
1,2,3,4,6,7,8-HpCDD	<2.6	103
OCDD	<3.6	102
2,3,7,8-TCDF	<0.87	96
1,2,3,7,8-PeCDF	<3.1	105
2,3,4,7,8-PeCDF	<1.7	100
1,2,3,4,7,8-HxCDF	<1.3	111
1,2,3,6,7,8-HxCDF	<0.84	102
2,3,4,6,7,8-HxCDF	<0.69	97
1,2,3,7,8,9-HxCDF	<2.8	105
1,2,3,4,6,7,8-HpCDF	2.34	106
1,2,3,4,7,8,9-HpCDF	<1.5	93
OCDF	<2.7	96
Field Spike Standards	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	NS	NS
13C12-1,2,3,4,7,8-HxCDD	NS	NS
13C12-2,3,4,7,8-PeCDF	NS	NS
13C12-1,2,3,4,7,8-HxCDF	NS	NS
13C12-1,2,3,4,7,8,9-HpCDF	NS	NS
Extraction Standards		
13C12-2,3,7,8-TCDD	64	34
13C12-1,2,3,7,8-PeCDD	62	45
13C12-1,2,3,6,7,8-HxCDD	63	36
13C12-1,2,3,4,6,7,8-HpCDD	67	41
13C12-OCDD	69	39
13C12-2,3,7,8-TCDF	84	37
13C12-1,2,3,7,8-PeCDF	62	40
13C12-1,2,3,6,7,8-HxCDF	68	45
13C12-1,2,3,4,6,7,8-HpCDF	69	43
Cleanup Standard		
13C12-1,2,3,7,8,9-HxCDF	73	46
Homologue Group Totals	**pg**	
Total-TCDD	<1.8	
Total-PeCDD	<1.1	
Total-HxCDD	<3.0	
Total-HpCDD	<2.6	
Total-TCDF	<0.87	
Total-PeCDF	<0.97	
Total-HxCDF	<0.85	
Total-HpCDF	2.34	
Toxic Equivalency - (WHO 2005)		
Lower Bound PCDD/F TEQ (WHO 2005)	0.0234	
Mid Point PCDD/F TEQ (WHO 2005)	3.07	
Upper Bound PCDD/F TEQ (WHO 2005)	5.00	

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Sample Analysis Report

Sample Name	**21-22085-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1**	Sampling Date	1-Dec-21		
ALS Sample ID	L2669132-1	Extraction Date	14-Dec-21		Approved:
Analysis Method	EPA M23	Sample Size	1	sample	*K.BERG*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Stack	Split Ratio	6		18-Dec-2021

Run Information	**Run 1**
Filename	7-211217B23
Run Date	18-Dec-21 05:36
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS 7 DB5MSUS1382023H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	28.43	<2.3	2.3	M,U	1.8	30
1,2,3,7,8-PeCDD	1	32.25	9.51	1.3	M,J		150
1,2,3,4,7,8-HxCDD	0.1	34.26	<43	6.9	J,R	43	150
1,2,3,6,7,8-HxCDD	0.1	34.31	104	5.5	J		150
1,2,3,7,8,9-HxCDD	0.1	34.43	68.0	5.7	J		150
1,2,3,4,6,7,8-HpCDD	0.01	35.93	1630	9.4			150
OCDD	0.0003	37.44	1700	9.4			300
2,3,7,8-TCDF	0.1	27.48	6.25	1.9	J		30
1,2,3,7,8-PeCDF	0.03	31.34	11.7	1.9	J		150
2,3,4,7,8-PeCDF	0.3	32.04	<16	1.6	J,R	16	150
1,2,3,4,7,8-HxCDF	0.1	33.77	<37	2.0	M,J,R,1.	37	150
1,2,3,6,7,8-HxCDF	0.1	33.84	<31	1.6	M,J,1.	31	150
2,3,4,6,7,8-HxCDF	0.1	34.17	72.0	1.8	J		150
1,2,3,7,8,9-HxCDF	0.1	34.60	23.2	2.2	J		150
1,2,3,4,6,7,8-HpCDF	0.01	35.36	373	2.9			150
1,2,3,4,7,8,9-HpCDF	0.01	36.18	57.9	3.8	J		150
OCDF	0.0003	37.54	216	4.6	J		300

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1000	28.38	98	70-130
13C12-1,2,3,4,7,8-HxCDD	10000	34.25	108	70-130
13C12-2,3,4,7,8-PeCDF	10000	32.04	102	70-130
13C12-1,2,3,4,7,8-HxCDF	10000	33.76	107	70-130
13C12-1,2,3,4,7,8,9-HpCDF	10000	36.18	97	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	28.37	78	40-130
13C12-1,2,3,7,8-PeCDD	12000	32.24	80	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	34.30	69	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.91	60	25-130
13C12-OCDD	24000	37.44	66	25-130
13C12-2,3,7,8-TCDF	12000	27.45	81	40-130
13C12-1,2,3,7,8-PeCDF	12000	31.33	77	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.83	74	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.35	63	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.58	68	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	6	344	2.3	30
Total-PeCDD	8	738	1.3	150
Total-HxCDD	6	3100	6.9	150
Total-HpCDD	2	3590	9.4	150
Total-TCDF	9	154	1.9	30
Total-PeCDF	9	222	1.9	150
Total-HxCDF	8	436	2.2	150
Total-HpCDF	4	645	3.8	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	58.4
Mid Point PCDD/F TEQ (WHO 2005)	75.4
Upper Bound PCDD/F TEQ (WHO 2005)	76.6

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure
1.	This result is an EMPC

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1**	Sampling Date	1-Dec-21		Approved:
ALS Sample ID	L2669132-2	Extraction Date	14-Dec-21		*K.BERG*
Analysis Method	EPA M23	Sample Size	1	sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		18-Dec-2021
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	7-211217B24
Run Date	18-Dec-21 06:20
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS 7 DB5MSUS1382023H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<1.2	1.2	U		30
1,2,3,7,8-PeCDD	1	32.25	12.7	1.1	J		150
1,2,3,4,7,8-HxCDD	0.1	34.26	<67	3.5	J,R	67	150
1,2,3,6,7,8-HxCDD	0.1	34.30	157	2.7			150
1,2,3,7,8,9-HxCDD	0.1	34.43	89.1	2.9	J		150
1,2,3,4,6,7,8-HpCDD	0.01	35.93	2470	9.3			150
OCDD	0.0003	37.44	2360	8.2			300
2,3,7,8-TCDF	0.1	27.48	<3.5	1.6	M,J,R	3.5	30
1,2,3,7,8-PeCDF	0.03	31.34	<10	2.0	J,R	10	150
2,3,4,7,8-PeCDF	0.3	32.05	26.1	1.7	J		150
1,2,3,4,7,8-HxCDF	0.1	33.77	62.6	4.1	J		150
1,2,3,6,7,8-HxCDF	0.1	33.84	<52	3.4	M,J,1.	52	150
2,3,4,6,7,8-HxCDF	0.1	34.16	103	3.8	J		150
1,2,3,7,8,9-HxCDF	0.1	34.61	<31	4.6	M,J,1.	31	150
1,2,3,4,6,7,8-HpCDF	0.01	35.36	550	3.2			150
1,2,3,4,7,8,9-HpCDF	0.01	36.18	75.7	4.1	J		150
OCDF	0.0003	37.54	330	3.6			300

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1000	28.38	100	70-130
13C12-1,2,3,4,7,8-HxCDD	10000	34.25	104	70-130
13C12-2,3,4,7,8-PeCDF	10000	32.04	97	70-130
13C12-1,2,3,4,7,8-HxCDF	10000	33.76	105	70-130
13C12-1,2,3,4,7,8,9-HpCDF	10000	36.18	89	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	28.35	63	40-130
13C12-1,2,3,7,8-PeCDD	12000	32.24	64	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	34.30	53	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.91	47	25-130
13C12-OCDD	24000	37.43	45	25-130
13C12-2,3,7,8-TCDF	12000	27.45	65	40-130
13C12-1,2,3,7,8-PeCDF	12000	31.33	64	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.83	59	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.35	52	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.58	65	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	11	492	1.2	30
Total-PeCDD	8	894	1.1	150
Total-HxCDD	6	4510	3.5	150
Total-HpCDD	2	5430	9.3	150
Total-TCDF	13	184	1.6	30
Total-PeCDF	10	259	2.0	150
Total-HxCDF	14	767	4.6	150
Total-HpCDF	4	915	4.1	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	93.5
Mid Point PCDD/F TEQ (WHO 2005)	110
Upper Bound PCDD/F TEQ (WHO 2005)	110

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure
1.	This result is an EMPC

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1**	Sampling Date	2-Dec-21		
ALS Sample ID	L2669132-3	Extraction Date	14-Dec-21		Approved:
Analysis Method	EPA M23	Sample Size	1	sample	*K.BERG*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Stack	Split Ratio	6		18-Dec-2021

Run Information	**Run 1**
Filename	7-211217B25
Run Date	18-Dec-21 07:03
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS 7 DB5MSUS1382023H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<1.5	1.5	U		30
1,2,3,7,8-PeCDD	1	32.25	9.34	0.81	M,J		150
1,2,3,4,7,8-HxCDD	0.1	34.26	57.0	3.1	J		150
1,2,3,6,7,8-HxCDD	0.1	34.31	113	2.4	J		150
1,2,3,7,8,9-HxCDD	0.1	34.43	<45	2.5	J,R	45	150
1,2,3,4,6,7,8-HpCDD	0.01	35.93	1600	6.7			150
OCDD	0.0003	37.45	1630	6.8			300
2,3,7,8-TCDF	0.1	27.48	<2.8	1.8	J,R	2.8	30
1,2,3,7,8-PeCDF	0.03	31.35	<6.0	1.3	J,R	6.0	150
2,3,4,7,8-PeCDF	0.3	32.05	<20	1.1	J,R	20	150
1,2,3,4,7,8-HxCDF	0.1	33.78	40.0	3.0	J		150
1,2,3,6,7,8-HxCDF	0.1	33.84	<35	2.5	M,J,1.	35	150
2,3,4,6,7,8-HxCDF	0.1	34.17	73.5	2.8	J		150
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<3.4	3.4	U		150
1,2,3,4,6,7,8-HpCDF	0.01	35.36	388	2.8			150
1,2,3,4,7,8,9-HpCDF	0.01	36.19	<37	3.6	J,R	37	150
OCDF	0.0003	37.55	218	2.9	J		300
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	1000	28.38	101	70-130			
13C12-1,2,3,4,7,8-HxCDD	10000	34.25	134	70-130			
13C12-2,3,4,7,8-PeCDF	10000	32.04	103	70-130			
13C12-1,2,3,4,7,8-HxCDF	10000	33.77	113	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	10000	36.18	89	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	28.37	79	40-130			
13C12-1,2,3,7,8-PeCDD	12000	32.24	85	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	34.30	85	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.91	70	25-130			
13C12-OCDD	24000	37.44	73	25-130			
13C12-2,3,7,8-TCDF	12000	27.45	84	40-130			
13C12-1,2,3,7,8-PeCDF	12000	31.33	80	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.83	91	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.36	80	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	12000	34.59	92	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	**LQL**
Total-TCDD	8	366	1.5	30
Total-PeCDD	6	695	0.81	150
Total-HxCDD	6	3200	3.1	150
Total-HpCDD	2	3550	6.7	150
Total-TCDF	13	143	1.8	30
Total-PeCDF	8	145	1.3	150
Total-HxCDF	10	507	3.4	150
Total-HpCDF	2	497	3.6	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	58.1
Mid Point PCDD/F TEQ (WHO 2005)	73.9
Upper Bound PCDD/F TEQ (WHO 2005)	74.8

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure
1.	This result is an EMPC

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-SVOC-(16 THRU 20) BLANK1**	Sampling Date	2-Dec-21		Approved:
ALS Sample ID	L2669132-4	Extraction Date	14-Dec-21		*K.BERG*
Analysis Method	EPA M23	Sample Size	1	sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		18-Dec-2021
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	7-211217B26
Run Date	18-Dec-21 07:47
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS 7 DB5MSUS1382023H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<0.92	0.92	U		30
1,2,3,7,8-PeCDD	1	NotFnd	<0.72	0.72	U		150
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<1.1	1.1	U		150
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<0.89	0.89	U		150
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<0.94	0.94	U		150
1,2,3,4,6,7,8-HpCDD	0.01	35.93	<5.3	2.1	J,R	5.3	150
OCDD	0.0003	37.44	<12	2.4	M,J,R	12	300
2,3,7,8-TCDF	0.1	NotFnd	<0.66	0.66	U		30
1,2,3,7,8-PeCDF	0.03	31.34	<1.3	0.54	M,J,R	1.3	150
2,3,4,7,8-PeCDF	0.3	NotFnd	<0.48	0.48	U		150
1,2,3,4,7,8-HxCDF	0.1	33.78	<0.79	0.79	M,U	0.54	150
1,2,3,6,7,8-HxCDF	0.1	33.84	<0.64	0.64	M,U	0.44	150
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<0.72	0.72	U		150
1,2,3,7,8,9-HxCDF	0.1	34.59	<1.9	0.89	M,J,R	1.9	150
1,2,3,4,6,7,8-HpCDF	0.01	35.36	<1.9	0.92	M,J,R	1.9	150
1,2,3,4,7,8,9-HpCDF	0.01	36.19	<1.2	1.2	M,U	0.42	150
OCDF	0.0003	37.53	<1.6	1.3	M,J,R	1.6	300

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1000	28.38	100	70-130
13C12-1,2,3,4,7,8-HxCDD	10000	34.25	98	70-130
13C12-2,3,4,7,8-PeCDF	10000	32.04	101	70-130
13C12-1,2,3,4,7,8-HxCDF	10000	33.76	108	70-130
13C12-1,2,3,4,7,8,9-HpCDF	10000	36.18	96	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	28.37	71	40-130
13C12-1,2,3,7,8-PeCDD	12000	32.24	72	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	34.30	75	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.91	65	25-130
13C12-OCDD	24000	37.43	63	25-130
13C12-2,3,7,8-TCDF	12000	27.45	73	40-130
13C12-1,2,3,7,8-PeCDF	12000	31.33	71	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.83	86	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.35	66	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.58	78	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		
Total-TCDD	0	<0.92	0.92	U	30
Total-PeCDD	0	<0.72	0.72	U	150
Total-HxCDD	0	<1.1	1.1	U	150
Total-HpCDD	0	<2.1	2.1	U	150
Total-TCDF	0	<0.66	0.66	U	30
Total-PeCDF	0	<0.54	0.54	U	150
Total-HxCDF	0	<0.89	0.89	U	150
Total-HpCDF	0	<1.2	1.2	U	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.00
Mid Point PCDD/F TEQ (WHO 2005)	1.49
Upper Bound PCDD/F TEQ (WHO 2005)	2.68

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

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Laboratory Method Blank Analysis Report

Sample Name	**Media Blank**	Sampling Date	n/a		
ALS Sample ID	WG3669684-1	Extraction Date	14-Dec-21		Approved:
Analysis Method	EPA M23	Sample Size	1	sample	*K.BERG*
Analysis Type	Blank	Percent Moisture	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	6		18-Dec-2021

Run Information	**Run 1**
Filename	7-211217821
Run Date	18-Dec-21 04:08
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS 7 DB5MSUS1382023H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<1.8	1.8	U		30
1,2,3,7,8-PeCDD	1	NotFnd	<1.1	1.1	U		150
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<3.0	3.0	U		150
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<2.3	2.3	U		150
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<2.5	2.5	U		150
1,2,3,4,6,7,8-HpCDD	0.01	NotFnd	<2.6	2.6	U		150
OCDD	0.0003	37.46	<3.6	2.7	M,J,R	3.6	300
2,3,7,8-TCDF	0.1	NotFnd	<0.87	0.87	U		30
1,2,3,7,8-PeCDF	0.03	31.35	<3.1	0.97	M,J,R	3.1	150
2,3,4,7,8-PeCDF	0.3	32.06	<1.7	0.86	J,R	1.7	150
1,2,3,4,7,8-HxCDF	0.1	33.77	<1.3	0.76	M,J,R	1.3	150
1,2,3,6,7,8-HxCDF	0.1	33.83	<0.84	0.62	M,J,R	0.84	150
2,3,4,6,7,8-HxCDF	0.1	34.18	<0.69	0.69	M,U	0.61	150
1,2,3,7,8,9-HxCDF	0.1	34.60	<2.8	0.85	M,J,R	2.8	150
1,2,3,4,6,7,8-HpCDF	0.01	35.35	2.34	0.94	M,J		150
1,2,3,4,7,8,9-HpCDF	0.01	36.18	<1.5	1.2	M,J,R	1.5	150
OCDF	0.0003	37.56	<2.7	1.8	M,J,R	2.7	300

Field Spike Standards	**pg**	**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	0	NS	
13C12-1,2,3,4,7,8-HxCDD	0	NS	
13C12-2,3,4,7,8-PeCDF	0	NS	
13C12-1,2,3,4,7,8-HxCDF	0	NS	
13C12-1,2,3,4,7,8,9-HpCDF	0	NS	

Extraction Standards				
13C12-2,3,7,8-TCDD	12000	28.37	64	40-130
13C12-1,2,3,7,8-PeCDD	12000	32.25	62	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	34.30	63	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.93	67	25-130
13C12-OCDD	24000	37.44	69	25-130
13C12-2,3,7,8-TCDF	12000	27.45	84	40-130
13C12-1,2,3,7,8-PeCDF	12000	31.34	62	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.83	68	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.36	69	25-130

Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.59	73	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	**Flags**	**LQL**
Total-TCDD	0	<1.8	1.8	U	30
Total-PeCDD	0	<1.1	1.1	U	150
Total-HxCDD	0	<3.0	3.0	U	150
Total-HpCDD	0	<2.6	2.6	U	150
Total-TCDF	0	<0.87	0.87	U	30
Total-PeCDF	0	<0.97	0.97	U	150
Total-HxCDF	0	<0.85	0.85	U	150
Total-HpCDF	1	2.34	1.2		150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.0234
Mid Point PCDD/F TEQ (WHO 2005)	3.07
Upper Bound PCDD/F TEQ (WHO 2005)	5.00

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure
NS	Indicates that this standard was not spiked.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a		
ALS Sample ID	WG3669684-2	Extraction Date	14-Dec-21		Approved:
Analysis Method	EPA M23	Sample Size	1	n/a	*K.BERG*
Analysis Type	LCS	Percent Moisture	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	6		18-Dec-2021

Run Information	**Run 1**
Filename	7-211217B18
Run Date	18-Dec-21 02:01
Final Volume	10 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS 7 DB5MSUS1382023H

Target Analytes	pg	Ret. Time	% Rec	Limits	Flags
2,3,7,8-TCDD	1200	28.40	97	70-130	
1,2,3,7,8-PeCDD	6000	32.25	109	70-130	
1,2,3,4,7,8-HxCDD	6000	34.26	115	70-130	
1,2,3,6,7,8-HxCDD	6000	34.31	116	70-130	
1,2,3,7,8,9-HxCDD	6000	34.43	149	70-130	
1,2,3,4,6,7,8-HpCDD	6000	35.93	103	70-130	
OCDD	12000	37.44	102	70-130	
2,3,7,8-TCDF	1200	27.48	96	70-130	
1,2,3,7,8-PeCDF	6000	31.34	105	70-130	
2,3,4,7,8-PeCDF	6000	32.05	100	70-130	
1,2,3,4,7,8-HxCDF	6000	33.77	111	70-130	
1,2,3,6,7,8-HxCDF	6000	33.84	102	70-130	
2,3,4,6,7,8-HxCDF	6000	34.17	97	70-130	
1,2,3,7,8,9-HxCDF	6000	34.59	105	70-130	
1,2,3,4,6,7,8-HpCDF	6000	35.36	106	70-130	
1,2,3,4,7,8,9-HpCDF	6000	36.18	93	70-130	
OCDF	12000	37.54	96	70-130	
Field Spike Standards	**pg**		**% Rec**	**Limits**	
37Cl4-2,3,7,8-TCDD	0		NS		
13C12-1,2,3,4,7,8-HxCDD	0		NS		
13C12-2,3,4,7,8-PeCDF	0		NS		
13C12-1,2,3,4,7,8-HxCDF	0		NS		
13C12-1,2,3,4,7,8,9-HpCDF	0		NS		
Extraction Standards					
13C12-2,3,7,8-TCDD	12000	28.37	34	40-130	
13C12-1,2,3,7,8-PeCDD	12000	32.24	45	40-130	
13C12-1,2,3,6,7,8-HxCDD	12000	34.30	36	40-130	
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.91	41	25-130	
13C12-OCDD	24000	37.43	39	25-130	
13C12-2,3,7,8-TCDF	12000	27.47	37	40-130	
13C12-1,2,3,7,8-PeCDF	12000	31.33	40	40-130	
13C12-1,2,3,6,7,8-HxCDF	12000	33.83	45	40-130	
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.35	43	25-130	
Cleanup Standard	**pg**				
13C12-1,2,3,7,8,9-HxCDF	12000	34.58	46	40-130	

NS Indicates that this standard was not spiked.

1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Rd.
ALS WO#:	L2671585		Mississauga, ON L5J 2Y4
Date of Report	17-Jan-22		Canada
Date of Sample Receipt	10-Dec-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS: **PCDD/F by EPA M23**

Certified by:

Ron McLeod, PhD
Director, Air Toxics & Special Chemistries, Life Sciences

Results in this certificate relate only to the samples as submitted to the laboratory.
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Sample Analysis summary Report

Sample Name	21-22085-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2	21-22085-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2	21-22085-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2	21-22085-SVOC-(36 THRU 40) BLANK2
ALS Sample ID	L2671585-1	L2671585-2	L2671585-3	L2671585-4
Sample Size	1	1	1	1
Sample size units	Sample	Sample	Sample	Sample
Percent Moisture	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack
Sampling Date	9-Dec-21	9-Dec-21	10-Dec-21	10-Dec-21
Extraction Date	21-Dec-21	21-Dec-21	21-Dec-21	21-Dec-21
Target Analytes	**pg**	**pg**	**pg**	**pg**
2,3,7,8-TCDD	<1.7	<2.6	<1.4	<6.3
1,2,3,7,8-PeCDD	3.08	<3.3	3.32	<2.8
1,2,3,4,7,8-HxCDD	6.71	6.81	<4.6	<4.3
1,2,3,6,7,8-HxCDD	<10	14.1	12.3	<3.6
1,2,3,7,8,9-HxCDD	5.26	9.32	<6.1	<3.6
1,2,3,4,6,7,8-HpCDD	80.3	96.1	74.3	<6.1
OCDD	113	136	112	<68
2,3,7,8-TCDF	<1.8	4.88	<1.7	<2.9
1,2,3,7,8-PeCDF	<3.3	10.5	<3.5	<1.5
2,3,4,7,8-PeCDF	<6.9	<11	6.64	<1.4
1,2,3,4,7,8-HxCDF	6.58	<15	<5.7	<4.3
1,2,3,6,7,8-HxCDF	7.05	14.6	<5.4	<3.7
2,3,4,6,7,8-HxCDF	10.8	<15	10.9	<4.2
1,2,3,7,8,9-HxCDF	6.09	8.74	6.74	5.87
1,2,3,4,6,7,8-HpCDF	<20	43.0	22.6	<3.4
1,2,3,4,7,8,9-HpCDF	<2.9	5.90	<3.4	<3.3
OCDF	<13	17.9	<11	<17
Field Spike Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	106	106	106	102
13C12-1,2,3,4,7,8-HxCDD	117	121	125	96
13C12-2,3,4,7,8-PeCDF	108	115	110	102
13C12-1,2,3,4,7,8-HxCDF	108	111	110	104
13C12-1,2,3,4,7,8,9-HpCDF	101	99	107	106
Extraction Standards				
13C12-2,3,7,8-TCDD	53	49	51	62
13C12-1,2,3,7,8-PeCDD	56	54	57	59
13C12-1,2,3,6,7,8-HxCDD	61	54	58	74
13C12-1,2,3,4,6,7,8-HpCDD	59	49	61	72
13C12-OCDD	53	40	59	70
13C12-2,3,7,8-TCDF	61	55	57	67
13C12-1,2,3,7,8-PeCDF	54	50	54	60
13C12-1,2,3,6,7,8-HxCDF	59	51	55	70
13C12-1,2,3,4,6,7,8-HpCDF	57	48	56	69
Cleanup Standard				
13C12-1,2,3,7,8,9-HxCDF	52	51	63	66
Homologue Group Totals	**pg**	**pg**	**pg**	**pg**
Total-TCDD	97.6	130	103	<6.3
Total-PeCDD	127	176	121	<2.8
Total-HxCDD	258	324	276	<4.3
Total-HpCDD	165	197	154	<6.1
Total-TCDF	52.1	98.8	20.4	<2.9
Total-PeCDF	51.5	172	31.2	<1.5
Total-HxCDF	59.1	123	52.9	5.87
Total-HpCDF	5.58	71.7	22.6	<3.3
Toxic Equivalency - (WHO 2005)				
Lower Bound PCDD/F TEQ (WHO 2005)	8.17	7.66	9.31	0.587
Mid Point PCDD/F TEQ (WHO 2005)	12.5	18.6	12.4	6.81
Upper Bound PCDD/F TEQ (WHO 2005)	13.4	19.9	13.2	13.0

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Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG3673320-1	WG3673320-2
Sample Size	1	1
Sample size units	Sample	n/a
Percent Moisture	n/a	n/a
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	21-Dec-21	21-Dec-21
Target Analytes	**pg**	**% Rec**
2,3,7,8-TCDD	<0.77	98
1,2,3,7,8-PeCDD	<0.45	110
1,2,3,4,7,8-HxCDD	<0.52	112
1,2,3,6,7,8-HxCDD	<0.82	98
1,2,3,7,8,9-HxCDD	<0.92	105
1,2,3,4,6,7,8-HpCDD	3.40	93
OCDD	24.1	90
2,3,7,8-TCDF	<0.50	95
1,2,3,7,8-PeCDF	2.16	107
2,3,4,7,8-PeCDF	<0.47	97
1,2,3,4,7,8-HxCDF	<0.51	116
1,2,3,6,7,8-HxCDF	0.622	107
2,3,4,6,7,8-HxCDF	<0.58	110
1,2,3,7,8,9-HxCDF	5.02	117
1,2,3,4,6,7,8-HpCDF	<1.1	101
1,2,3,4,7,8,9-HpCDF	1.19	100
OCDF	7.02	89
Field Spike Standards	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	NS	NS
13C12-1,2,3,4,7,8-HxCDD	NS	NS
13C12-2,3,4,7,8-PeCDF	NS	NS
13C12-1,2,3,4,7,8-HxCDF	NS	NS
13C12-1,2,3,4,7,8,9-HpCDF	NS	NS
Extraction Standards		
13C12-2,3,7,8-TCDD	52	74
13C12-1,2,3,7,8-PeCDD	59	87
13C12-1,2,3,6,7,8-HxCDD	66	97
13C12-1,2,3,4,6,7,8-HpCDD	70	102
13C12-OCDD	64	99
13C12-2,3,7,8-TCDF	57	80
13C12-1,2,3,7,8-PeCDF	54	82
13C12-1,2,3,6,7,8-HxCDF	60	90
13C12-1,2,3,4,6,7,8-HpCDF	64	95
Cleanup Standard		
13C12-1,2,3,7,8,9-HxCDF	68	101
Homologue Group Totals	**pg**	
Total-TCDD	<0.77	
Total-PeCDD	<0.45	
Total-HxCDD	<0.52	
Total-HpCDD	3.40	
Total-TCDF	<0.50	
Total-PeCDF	2.16	
Total-HxCDF	5.64	
Total-HpCDF	1.19	
Toxic Equivalency - (WHO 2005)		
Lower Bound PCDD/F TEQ (WHO 2005)	0.684	
Mid Point PCDD/F TEQ (WHO 2005)	1.68	
Upper Bound PCDD/F TEQ (WHO 2005)	2.44	

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Sample Analysis Report

Sample Name	**21-22085-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2**	Sampling Date	9-Dec-21		
ALS Sample ID	L2671585-1	Extraction Date	21-Dec-21		Approved:
Analysis Method	EPA M23	Sample Size	1	Sample	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Stack	Split Ratio	6		11-Jan-2022

Run Information	**Run 1**
Filename	6-220110A15
Run Date	10-Jan-22 21:19
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS6 DB5MSUS1382025H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	28.28	<1.7	1.7	M,U	1.2	30
1,2,3,7,8-PeCDD	1	32.14	3.08	0.90	M,J		150
1,2,3,4,7,8-HxCDD	0.1	34.14	6.71	1.2	J		150
1,2,3,6,7,8-HxCDD	0.1	34.19	<10	0.96	J,R	10	150
1,2,3,7,8,9-HxCDD	0.1	34.31	5.26	0.98	M,J		150
1,2,3,4,6,7,8-HpCDD	0.01	35.79	80.3	1.6	J		150
OCDD	0.0003	37.30	113	0.70	J,B		300
2,3,7,8-TCDF	0.1	27.33	<1.8	1.8	M,U		30
1,2,3,7,8-PeCDF	0.03	31.24	<3.3	1.2	J,R	3.3	150
2,3,4,7,8-PeCDF	0.3	31.95	<6.9	1.1	J,R	6.9	150
1,2,3,4,7,8-HxCDF	0.1	33.66	6.58	0.46	M,J		150
1,2,3,6,7,8-HxCDF	0.1	33.73	7.05	0.40	M,J		150
2,3,4,6,7,8-HxCDF	0.1	34.06	10.8	0.45	J		150
1,2,3,7,8,9-HxCDF	0.1	34.47	6.09	0.53	J,B		150
1,2,3,4,6,7,8-HpCDF	0.01	35.23	<20	0.37	J,R	20	150
1,2,3,4,7,8,9-HpCDF	0.01	36.05	<2.9	0.48	J,R	2.9	150
OCDF	0.0003	37.39	<13	0.57	M,J,R	13	300
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	1000	28.28	106	70-130			
13C12-1,2,3,4,7,8-HxCDD	10000	34.13	117	70-130	R		
13C12-2,3,4,7,8-PeCDF	10000	31.94	108	70-130			
13C12-1,2,3,4,7,8-HxCDF	10000	33.65	108	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	10000	36.04	101	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	28.26	53	40-130			
13C12-1,2,3,7,8-PeCDD	12000	32.13	56	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	34.18	61	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.79	59	25-130			
13C12-OCDD	24000	37.29	53	25-130			
13C12-2,3,7,8-TCDF	12000	27.33	61	40-130			
13C12-1,2,3,7,8-PeCDF	12000	31.22	54	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.72	59	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.22	57	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	12000	34.46	52	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	3	97.6	1.7	30
Total-PeCDD	6	127	0.90	150
Total-HxCDD	6	258	1.2	150
Total-HpCDD	2	165	1.6	150
Total-TCDF	8	52.1	1.8	30
Total-PeCDF	7	51.5	1.2	150
Total-HxCDF	7	59.1	0.53	150
Total-HpCDF	1	5.58	0.48	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	8.17
Mid Point PCDD/F TEQ (WHO 2005)	12.5
Upper Bound PCDD/F TEQ (WHO 2005)	13.4

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**21-22085-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2**	Sampling Date	9-Dec-21		Approved:
ALS Sample ID	L2671585-2	Extraction Date	21-Dec-21		*T.Patterson*
Analysis Method	EPA M23	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		11-Jan-2022
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	6-220110A16
Run Date	10-Jan-22 22:04
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS6 DB5MSUS1382025H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<2.6	2.6	U		30
1,2,3,7,8-PeCDD	1	32.13	<3.3	0.63	M,J,R	3.3	150
1,2,3,4,7,8-HxCDD	0.1	34.13	6.81	3.7	J		150
1,2,3,6,7,8-HxCDD	0.1	34.18	14.1	3.0	J		150
1,2,3,7,8,9-HxCDD	0.1	34.30	9.32	3.1	J		150
1,2,3,4,6,7,8-HpCDD	0.01	35.79	96.1	0.88	J		150
OCDD	0.0003	37.29	136	0.78	J,B		300
2,3,7,8-TCDF	0.1	27.33	4.88	2.1	M,J		30
1,2,3,7,8-PeCDF	0.03	31.24	10.5	0.95	J,B		150
2,3,4,7,8-PeCDF	0.3	31.94	<11	0.88	J,R	11	150
1,2,3,4,7,8-HxCDF	0.1	33.65	<15	0.95	J,R	15	150
1,2,3,6,7,8-HxCDF	0.1	33.72	14.6	0.82	J		150
2,3,4,6,7,8-HxCDF	0.1	34.04	<15	0.92	M,J,R	15	150
1,2,3,7,8,9-HxCDF	0.1	34.48	8.74	1.1	J,B		150
1,2,3,4,6,7,8-HpCDF	0.01	35.22	43.0	0.65	J		150
1,2,3,4,7,8,9-HpCDF	0.01	36.04	5.90	0.85	M,J,B		150
OCDF	0.0003	37.38	17.9	0.49	J,B		300
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	1000	28.27	106	70-130			
13C12-1,2,3,4,7,8-HxCDD	10000	34.12	121	70-130			
13C12-2,3,4,7,8-PeCDF	10000	31.92	115	70-130			
13C12-1,2,3,4,7,8-HxCDF	10000	33.64	111	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	10000	36.04	99	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	28.24	49	40-130			
13C12-1,2,3,7,8-PeCDD	12000	32.13	54	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	34.17	54	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.77	49	25-130			
13C12-OCDD	24000	37.28	40	25-130			
13C12-2,3,7,8-TCDF	12000	27.33	55	40-130			
13C12-1,2,3,7,8-PeCDF	12000	31.22	50	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.72	51	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.22	48	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	12000	34.45	51	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		**LQL**
Total-TCDD	5	130	2.6		30
Total-PeCDD	6	176	0.63		150
Total-HxCDD	7	324	3.7		150
Total-HpCDD	2	197	0.88		150
Total-TCDF	11	98.8	2.1		30
Total-PeCDF	12	172	0.95		150
Total-HxCDF	8	123	1.1		150
Total-HpCDF	4	71.7	0.85		150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	7.66
Mid Point PCDD/F TEQ (WHO 2005)	18.6
Upper Bound PCDD/F TEQ (WHO 2005)	19.9

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**21-22085-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2**	Sampling Date	10-Dec-21		Approved:
ALS Sample ID	L2671585-3	Extraction Date	21-Dec-21		*T.Patterson*
Analysis Method	EPA M23	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		11-Jan-2022
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	6-220110A17
Run Date	10-Jan-22 22:49
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS6 DB5MSUS1382025H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<1.4	1.4	U		30
1,2,3,7,8-PeCDD	1	32.14	3.32	0.74	J		150
1,2,3,4,7,8-HxCDD	0.1	34.13	<4.6	0.79	M,J,R	4.6	150
1,2,3,6,7,8-HxCDD	0.1	34.18	12.3	0.66	J		150
1,2,3,7,8,9-HxCDD	0.1	34.30	<6.1	0.67	M,J,R	6.1	150
1,2,3,4,6,7,8-HpCDD	0.01	35.79	74.3	0.85	J		150
OCDD	0.0003	37.29	112	0.78	J,B		300
2,3,7,8-TCDF	0.1	27.32	<1.7	1.7	M,U	1.5	30
1,2,3,7,8-PeCDF	0.03	31.22	<3.5	0.80	M,J,R	3.5	150
2,3,4,7,8-PeCDF	0.3	31.94	6.64	0.74	J		150
1,2,3,4,7,8-HxCDF	0.1	33.65	<5.7	0.44	J,R	5.7	150
1,2,3,6,7,8-HxCDF	0.1	33.72	<5.4	0.38	J,R	5.4	150
2,3,4,6,7,8-HxCDF	0.1	34.04	10.9	0.42	J		150
1,2,3,7,8,9-HxCDF	0.1	34.48	6.74	0.51	J,B		150
1,2,3,4,6,7,8-HpCDF	0.01	35.22	22.6	0.28	J		150
1,2,3,4,7,8,9-HpCDF	0.01	36.04	<3.4	0.36	M,J,R	3.4	150
OCDF	0.0003	37.38	<11	0.47	M,J,R	11	300
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	1000	28.27	106	70-130			
13C12-1,2,3,4,7,8-HxCDD	10000	34.12	125	70-130			
13C12-2,3,4,7,8-PeCDF	10000	31.92	110	70-130			
13C12-1,2,3,4,7,8-HxCDF	10000	33.64	110	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	10000	36.04	107	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	28.24	51	40-130			
13C12-1,2,3,7,8-PeCDD	12000	32.12	57	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	34.17	58	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.77	61	25-130			
13C12-OCDD	24000	37.28	59	25-130			
13C12-2,3,7,8-TCDF	12000	27.32	57	40-130			
13C12-1,2,3,7,8-PeCDF	12000	31.21	54	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.71	55	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.22	56	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	12000	34.45	63	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		**LQL**
Total-TCDD	4	103	1.4		30
Total-PeCDD	5	121	0.74		150
Total-HxCDD	5	276	0.79		150
Total-HpCDD	2	154	0.85		150
Total-TCDF	4	20.4	1.7		30
Total-PeCDF	6	31.2	0.80		150
Total-HxCDF	7	52.9	0.51		150
Total-HpCDF	1	22.6	0.36		150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	9.31
Mid Point PCDD/F TEQ (WHO 2005)	12.4
Upper Bound PCDD/F TEQ (WHO 2005)	13.2

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**21-22085-SVOC-(36 THRU 40) BLANK2**	Sampling Date	10-Dec-21		Approved:
ALS Sample ID	L2671585-4	Extraction Date	21-Dec-21		*T.Patterson*
Analysis Method	EPA M23	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		11-Jan-2022
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	6-220110A14
Run Date	10-Jan-22 20:33
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS6 DB5MSUS1382025H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<6.3	6.3	U		30
1,2,3,7,8-PeCDD	1	NotFnd	<2.8	2.8	U		150
1,2,3,4,7,8-HxCDD	0.1	34.15	<4.3	4.3	M,U	2.2	150
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<3.6	3.6	U		150
1,2,3,7,8,9-HxCDD	0.1	34.32	<3.6	3.6	M,U	3.6	150
1,2,3,4,6,7,8-HpCDD	0.01	35.79	<6.1	6.1	M,U	5.2	150
OCDD	0.0003	37.29	<68	2.7	M,J,R	68	300
2,3,7,8-TCDF	0.1	NotFnd	<2.9	2.9	U		30
1,2,3,7,8-PeCDF	0.03	NotFnd	<1.5	1.5	U		150
2,3,4,7,8-PeCDF	0.3	NotFnd	<1.4	1.4	U		150
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<4.3	4.3	U		150
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<3.7	3.7	U		150
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<4.2	4.2	U		150
1,2,3,7,8,9-HxCDF	0.1	34.48	5.87	5.0	M,J,B		150
1,2,3,4,6,7,8-HpCDF	0.01	35.23	<3.4	2.5	M,J,R	3.4	150
1,2,3,4,7,8,9-HpCDF	0.01	36.05	<3.3	3.3	M,U	2.8	150
OCDF	0.0003	37.40	<17	4.1	M,J,R	17	300

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1000	28.31	102	70-130
13C12-1,2,3,4,7,8-HxCDD	10000	34.13	96	70-130
13C12-2,3,4,7,8-PeCDF	10000	31.95	102	70-130
13C12-1,2,3,4,7,8-HxCDF	10000	33.65	104	70-130
13C12-1,2,3,4,7,8,9-HpCDF	10000	36.04	106	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	28.28	62	40-130
13C12-1,2,3,7,8-PeCDD	12000	32.14	59	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	34.18	74	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.79	72	25-130
13C12-OCDD	24000	37.28	70	25-130
13C12-2,3,7,8-TCDF	12000	27.38	67	40-130
13C12-1,2,3,7,8-PeCDF	12000	31.24	60	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.72	70	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.22	69	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.46	66	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		**LQL**
Total-TCDD	0	<6.3	6.3	U	30
Total-PeCDD	0	<2.8	2.8	U	150
Total-HxCDD	0	<4.3	4.3	U	150
Total-HpCDD	0	<6.1	6.1	U	150
Total-TCDF	0	<2.9	2.9	U	30
Total-PeCDF	0	<1.5	1.5	U	150
Total-HxCDF	1	5.87	5.0		150
Total-HpCDF	0	<3.3	3.3	U	150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.587
Mid Point PCDD/F TEQ (WHO 2005)	6.81
Upper Bound PCDD/F TEQ (WHO 2005)	13.0

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

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Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a		Approved:
ALS Sample ID	WG3673320-1	Extraction Date	21-Dec-21		*T.Patterson*
Analysis Method	EPA M23	Sample Size	1	Sample	--e-signature--
Analysis Type	Blank	Percent Moisture	n/a		11-Jan-2022
Sample Matrix	QC	Split Ratio	6		

Run Information	**Run 1**
Filename	6-220110A13
Run Date	10-Jan-22 19:48
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS6 DB5MSUS1382025H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<0.77	0.77	U		30
1,2,3,7,8-PeCDD	1	NotFnd	<0.45	0.45	U		150
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<0.52	0.52	U		150
1,2,3,6,7,8-HxCDD	0.1	34.19	<0.82	0.43	M,J,R	0.82	150
1,2,3,7,8,9-HxCDD	0.1	34.30	<0.92	0.44	M,J,R	0.92	150
1,2,3,4,6,7,8-HpCDD	0.01	35.77	3.40	0.29	J		150
OCDD	0.0003	37.28	24.1	0.69	J		300
2,3,7,8-TCDF	0.1	NotFnd	<0.50	0.50	U		30
1,2,3,7,8-PeCDF	0.03	31.22	2.16	0.51	M,J		150
2,3,4,7,8-PeCDF	0.3	31.95	<0.47	0.47	M,U	0.45	150
1,2,3,4,7,8-HxCDF	0.1	33.64	<0.51	0.51	M,U	0.48	150
1,2,3,6,7,8-HxCDF	0.1	33.73	0.622	0.44	M,J		150
2,3,4,6,7,8-HxCDF	0.1	34.03	<0.58	0.50	M,J,R	0.58	150
1,2,3,7,8,9-HxCDF	0.1	34.45	5.02	0.59	J		150
1,2,3,4,6,7,8-HpCDF	0.01	35.22	<1.1	0.78	J,R	1.1	150
1,2,3,4,7,8,9-HpCDF	0.01	36.04	1.19	1.0	M,J		150
OCDF	0.0003	37.39	7.02	0.62	M,J		300

Field Spike Standards	**% Rec**
37Cl4-2,3,7,8-TCDD	NS
13C12-1,2,3,4,7,8-HxCDD	NS
13C12-2,3,4,7,8-PeCDF	NS
13C12-1,2,3,4,7,8-HxCDF	NS
13C12-1,2,3,4,7,8,9-HpCDF	NS

Extraction Standards				
13C12-2,3,7,8-TCDD	12000	28.24	52	40-130
13C12-1,2,3,7,8-PeCDD	12000	32.12	59	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	34.17	66	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.77	70	25-130
13C12-OCDD	24000	37.27	64	25-130
13C12-2,3,7,8-TCDF	12000	27.32	57	40-130
13C12-1,2,3,7,8-PeCDF	12000	31.21	54	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.71	60	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.21	64	25-130

Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.45	68	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		**LQL**
Total-TCDD	0	<0.77	0.77	U	30
Total-PeCDD	0	<0.45	0.45	U	150
Total-HxCDD	0	<0.52	0.52	U	150
Total-HpCDD	1	3.40	0.29		150
Total-TCDF	0	<0.50	0.50	U	30
Total-PeCDF	1	2.16	0.51		150
Total-HxCDF	2	5.64	0.59		150
Total-HpCDF	1	1.19	1.0		150

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.684
Mid Point PCDD/F TEQ (WHO 2005)	1.68
Upper Bound PCDD/F TEQ (WHO 2005)	2.44

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure
NS	Indicates that this standard was not spiked to sample

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Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a		
ALS Sample ID	WG3673320-2	Extraction Date	21-Dec-21		Approved:
Analysis Method	EPA M23	Sample Size	1	n/a	*T.Patterson*
Analysis Type	LCS	Percent Moisture	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	6		11-Jan-2022

Run Information	**Run 1**
Filename	6-220110A09
Run Date	10-Jan-22 16:52
Final Volume	10 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS6 DB5MSUS1382025H

Target Analytes	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,3,7,8-TCDD	1200	28.28	98	70-130	
1,2,3,7,8-PeCDD	6000	32.14	110	70-130	
1,2,3,4,7,8-HxCDD	6000	34.13	112	70-130	
1,2,3,6,7,8-HxCDD	6000	34.18	98	70-130	
1,2,3,7,8,9-HxCDD	6000	34.31	105	70-130	
1,2,3,4,6,7,8-HpCDD	6000	35.79	93	70-130	
OCDD	12000	37.29	90	70-130	
2,3,7,8-TCDF	1200	27.36	95	70-130	
1,2,3,7,8-PeCDF	6000	31.24	107	70-130	
2,3,4,7,8-PeCDF	6000	31.95	97	70-130	
1,2,3,4,7,8-HxCDF	6000	33.65	116	70-130	
1,2,3,6,7,8-HxCDF	6000	33.73	107	70-130	
2,3,4,6,7,8-HxCDF	6000	34.04	110	70-130	
1,2,3,7,8,9-HxCDF	6000	34.46	117	70-130	
1,2,3,4,6,7,8-HpCDF	6000	35.23	101	70-130	
1,2,3,4,7,8,9-HpCDF	6000	36.05	100	70-130	
OCDF	12000	37.39	89	70-130	
Field Spike Standards			**% Rec**		
37Cl4-2,3,7,8-TCDD			NS		
13C12-1,2,3,4,7,8-HxCDD			NS		
13C12-2,3,4,7,8-PeCDF			NS		
13C12-1,2,3,4,7,8-HxCDF			NS		
13C12-1,2,3,4,7,8,9-HpCDF			NS		
Extraction Standards					
13C12-2,3,7,8-TCDD	12000	28.26	74	40-130	
13C12-1,2,3,7,8-PeCDD	12000	32.13	87	40-130	
13C12-1,2,3,6,7,8-HxCDD	12000	34.18	97	40-130	
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.77	102	25-130	
13C12-OCDD	24000	37.29	99	25-130	
13C12-2,3,7,8-TCDF	12000	27.33	80	40-130	
13C12-1,2,3,7,8-PeCDF	12000	31.22	82	40-130	
13C12-1,2,3,6,7,8-HxCDF	12000	33.72	90	40-130	
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.22	95	25-130	
Cleanup Standard	**pg**				
13C12-1,2,3,7,8,9-HxCDF	12000	34.46	101	40-130	

NS Indicates that this standard was not spiked to sample

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	Ortech Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2669132		Mississauga, ON
Date of Report	21-Dec-21		L5J 2Y4
Date of Sample Receipt	03-Dec-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS: **PCB Congeners by EPA 1668C**

Certified by:

Ron McLeod, PhD
Director, Air Toxics & Special Chemistries, Life Sciences

Results in this certificate relate only to the samples as submitted to the laboratory.
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Sample Analysis Summary Report

Sample Name	21-22085-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1	21-22085-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1	21-22085-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1	21-22085-SVOC-(16 THRU 20) BLANK1
ALS Sample ID	L2669132-1	L2669132-2	L2669132-3	L2669132-4
Sample Size	1	1	1	1
Sample size units	sample	sample	sample	sample
Percent Moisture	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack
Sampling Date	1-Dec-21	1-Dec-21	2-Dec-21	2-Dec-21
Extraction Date	14-Dec-21	14-Dec-21	14-Dec-21	14-Dec-21
Target Analytes	**pg**	**pg**	**pg**	**pg**
PCB-081	<16	<21	<15	<6.0
PCB-077	170	530	144	<5.5
PCB-123	42.8	<58	81.7	<7.0
PCB-118	2290	4130	3470	18.7
PCB-114	<49	108	<89	<7.0
PCB-105	716	1020	1050	<6.4
PCB-126	<12	<32	<29	<6.6
PCB-167	<28	<26	<28	<3.4
PCB-156/157	89.7	<72	78.6	<4.6
PCB-169	<7.9	<11	<12	<3.5
PCB-189	<20	26.7	<12	<2.4
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**
13C12-PCB-081	44	38	38	34
13C12-PCB-077	47	46	38	39
13C12-PCB-123	47	38	40	37
13C12-PCB-118	44	37	38	36
13C12-PCB-114	49	41	43	37
13C12-PCB-105	50	49	42	43
13C12-PCB-126	57	47	48	50
13C12-PCB-167	55	42	44	45
13C12-PCB-156/157	50	38	42	41
13C12-PCB-169	64	49	53	56
13C12-PCB-189	60	45	50	55
Field Spike Standards				
13C12-PCB-031	100	106	102	95
13C12-PCB-095	51	51	54	45
13C12-PCB-153	93	96	97	91
Cleanup Standards				
13C12-PCB-028	33	38	29	25
13C12-PCB-111	47	48	42	39
13C12-PCB-178	51	53	52	49
Toxic Equivalency - (WHO 2005)	**pg**	**pg**	**pg**	**pg**
Lower Bound PCB TEQ	0.111	0.212	0.155	0.000561
Mid Point PCB TEQ	0.835	3.58	3.24	0.385
Upper Bound PCB TEQ	1.56	3.75	3.42	0.769

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Quality Control Summary Report

Sample Name	Media Blank
ALS Sample ID	WG3669684-1
Sample Size	1
Sample size units	sample
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	14-Dec-21

Target Analytes	pg
PCB-081	<5.8
PCB-077	<6.2
PCB-123	<6.8
PCB-118	<13
PCB-114	<6.7
PCB-105	<6.8
PCB-126	<6.5
PCB-167	<4.2
PCB-156/157	<5.5
PCB-169	<4.5
PCB-189	<3.5
Extraction Standards	**% Rec**
13C12-PCB-081	31
13C12-PCB-077	32
13C12-PCB-123	33
13C12-PCB-118	34
13C12-PCB-114	35
13C12-PCB-105	36
13C12-PCB-126	43
13C12-PCB-167	39
13C12-PCB-156/157	39
13C12-PCB-169	50
13C12-PCB-189	49
Field Spike Standards	
13C12-PCB-031	NS
13C12-PCB-095	NS
13C12-PCB-153	NS
Cleanup Standards	
13C12-PCB-028	26
13C12-PCB-111	31
13C12-PCB-178	34

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCB TEQ	0.00
Mid Point PCB TEQ	0.395
Upper Bound PCB TEQ	0.789

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Sample Analysis Summary Report

Sample Name	Laboratory Control Sample
ALS Sample ID	WG3669684-2
Sample Size	1
Sample size units	n/a
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	14-Dec-21

Target Analytes	% Rec
PCB-001	108
PCB-003	100
PCB-004	105
PCB-015	101
PCB-019	104
PCB-037	97
PCB-054	104
PCB-081	102
PCB-077	103
PCB-104	93
PCB-123	99
PCB-118	102
PCB-114	99
PCB-105	94
PCB-126	92
PCB-155	97
PCB-167	93
PCB-156/157	91
PCB-169	94
PCB-188	97
PCB-189	100
PCB-202	101
PCB-205	96
PCB-208	95
PCB-206	93
PCB-209	106
Extraction Standards	**% Rec**
13C12-PCB-001	10
13C12-PCB-003	11
13C12-PCB-004	9
13C12-PCB-015	17
13C12-PCB-019	8
13C12-PCB-037	26
13C12-PCB-054	9
13C12-PCB-081	32
13C12-PCB-077	35
13C12-PCB-104	15
13C12-PCB-123	37
13C12-PCB-118	36
13C12-PCB-114	39
13C12-PCB-105	42
13C12-PCB-126	51
13C12-PCB-155	25
13C12-PCB-167	46
13C12-PCB-156/157	44
13C12-PCB-169	56
13C12-PCB-188	29
13C12-PCB-189	51
13C12-PCB-202	38
13C12-PCB-205	45
13C12-PCB-208	44
13C12-PCB-206	45
13C12-PCB-209	44
Cleanup Standards	
13C12-PCB-028	38
13C12-PCB-111	71
13C12-PCB-178	78

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1**	Sampling Date	1-Dec-21		Approved:
ALS Sample ID	L2669132-1	Extraction Date	14-Dec-21		*N Ashtari*
Analysis Method	EPA 1668C	Sample Size	1	sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		21-Dec-2021
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	5_211220A07
Run Date	20-Dec-21 15:34
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOCTYL256001-02

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-0B1	0.0003	NotFnd	<16	16	U		150
PCB-077	0.0001	22.20	170	16			150
PCB-123	0.00003	23.17	42.8	12	J		150
PCB-118	0.00003	23.34	2290	12	M		150
PCB-114	0.00003	23.63	<49	11	M,J,R	49	150
PCB-105	0.00003	23.99	716	11			150
PCB-126	0.1	NotFnd	<12	12	U		150
PCB-167	0.00003	26.47	<28	7.1	M,J,R	28	150
PCB-156/157	0.00003	27.08	89.7	9.9	J		300
PCB-169	0.03	28.78	<7.9	7.9	M,U	7.3	150
PCB-189	0.00003	30.02	<20	3.9	J,R	20	150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-0B1	12000	21.88	44	10-145
13C12-PCB-077	12000	22.19	47	10-145
13C12-PCB-123	12000	23.16	47	10-145
13C12-PCB-118	12000	23.33	44	10-145
13C12-PCB-114	12000	23.63	49	10-145
13C12-PCB-105	12000	23.98	50	10-145
13C12-PCB-126	12000	25.59	57	10-145
13C12-PCB-167	12000	26.46	55	10-145
13C12-PCB-156/157	24000	27.10	50	10-145
13C12-PCB-169	12000	28.76	64	10-145
13C12-PCB-189	12000	30.02	60	10-145
Field Spike Standards				
13C12-PCB-031	10000	15.87	100	70-130
13C12-PCB-095	10000	19.16	51	70-130
13C12-PCB-153	10000	24.24	93	70-130
Cleanup Standards				
13C12-PCB-028	12000	16.05	33	5-145
13C12-PCB-111	12000	22.09	47	10-145
13C12-PCB-17B	12000	25.11	51	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.111
Mid Point PCB TEQ	0.835
Upper Bound PCB TEQ	1.56

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1**	Sampling Date	1-Dec-21		Approved:
ALS Sample ID	L2669132-2	Extraction Date	14-Dec-21		*N Ashtari*
Analysis Method	EPA 1668C	Sample Size	1	sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		21-Dec-2021
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	5_211220A08
Run Date	20-Dec-21 16:17
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOCTYL256001-02

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<21	21	U		150
PCB-077	0.0001	22.20	530	19			150
PCB-123	0.00003	23.16	<58	21	M,J,R	58	150
PCB-118	0.00003	23.34	4130	20	M		150
PCB-114	0.00003	23.64	108	18	J		150
PCB-105	0.00003	23.99	1020	15			150
PCB-126	0.1	25.59	<32	20	M,J,R	32	150
PCB-167	0.00003	26.48	<26	10	J,R	26	150
PCB-156/157	0.00003	27.08	<72	14	J,R	72	300
PCB-169	0.03	28.79	<11	11	M,U	7.9	150
PCB-189	0.00003	30.03	26.7	7.5	J		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**	
13C12-PCB-081	12000	21.88	38	10-145	
13C12-PCB-077	12000	22.19	46	10-145	
13C12-PCB-123	12000	23.16	38	10-145	
13C12-PCB-118	12000	23.33	37	10-145	
13C12-PCB-114	12000	23.63	41	10-145	
13C12-PCB-105	12000	23.98	49	10-145	
13C12-PCB-126	12000	25.59	47	10-145	
13C12-PCB-167	12000	26.47	42	10-145	
13C12-PCB-156/157	24000	27.10	38	10-145	
13C12-PCB-169	12000	28.76	49	10-145	R
13C12-PCB-189	12000	30.02	45	10-145	
Field Spike Standards					
13C12-PCB-031	10000	15.88	106	70-130	
13C12-PCB-095	10000	19.17	51	70-130	
13C12-PCB-153	10000	24.24	96	70-130	
Cleanup Standards					
13C12-PCB-028	12000	16.05	38	5-145	
13C12-PCB-111	12000	22.09	48	10-145	
13C12-PCB-178	12000	25.13	53	10-145	

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.212
Mid Point PCB TEQ	3.58
Upper Bound PCB TEQ	3.75

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1**	Sampling Date	2-Dec-21		Approved:
ALS Sample ID	L2669132-3	Extraction Date	14-Dec-21		*N Ashtari*
Analysis Method	EPA 1668C	Sample Size	1	sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		21-Dec-2021
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	5_211220A09
Run Date	20-Dec-21 16:59
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOCTYL256001-02

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<15	15	U		150
PCB-077	0.0001	22.20	144	16	J		150
PCB-123	0.00003	23.16	81.7	13	M,J		150
PCB-118	0.00003	23.34	3470	13	M		150
PCB-114	0.00003	23.65	<89	12	J,R	89	150
PCB-105	0.00003	23.99	1050	13			150
PCB-126	0.1	25.61	<29	13	J,R	29	150
PCB-167	0.00003	26.48	<28	11	J,R	28	150
PCB-156/157	0.00003	27.10	78.6	15	J		300
PCB-169	0.03	NotFnd	<12	12	U		150
PCB-189	0.00003	30.05	<12	6.6	J,R	12	150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	21.88	38	10-145
13C12-PCB-077	12000	22.20	38	10-145
13C12-PCB-123	12000	23.16	40	10-145
13C12-PCB-118	12000	23.33	38	10-145
13C12-PCB-114	12000	23.63	43	10-145
13C12-PCB-105	12000	23.98	42	10-145
13C12-PCB-126	12000	25.59	48	10-145
13C12-PCB-167	12000	26.47	44	10-145
13C12-PCB-156/157	24000	27.10	42	10-145
13C12-PCB-169	12000	28.76	53	10-145
13C12-PCB-189	12000	30.02	50	10-145

Field Spike Standards				
13C12-PCB-031	10000	15.88	102	70-130
13C12-PCB-095	10000	19.17	54	70-130
13C12-PCB-153	10000	24.24	97	70-130

Cleanup Standards				
13C12-PCB-028	12000	16.06	29	5-145
13C12-PCB-111	12000	22.09	42	10-145
13C12-PCB-178	12000	25.13	52	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.155
Mid Point PCB TEQ	3.24
Upper Bound PCB TEQ	3.42

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**21-22085-SVOC-(16 THRU 20) BLANK1**	Sampling Date	2-Dec-21		Approved:
ALS Sample ID	L2669132-4	Extraction Date	14-Dec-21		*N Ashtari*
Analysis Method	EPA 1668C	Sample Size	1	sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		21-Dec-2021
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	5_211220A10
Run Date	20-Dec-21 17:41
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOCTYL256001-02

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<6.0	6.0	U		150
PCB-077	0.0001	NotFnd	<5.5	5.5	U		150
PCB-123	0.00003	NotFnd	<7.0	7.0	U		150
PCB-118	0.00003	23.34	18.7	7.0	J		150
PCB-114	0.00003	NotFnd	<7.0	7.0	U		150
PCB-105	0.00003	NotFnd	<6.4	6.4	U		150
PCB-126	0.1	NotFnd	<6.6	6.6	U		150
PCB-167	0.00003	NotFnd	<3.4	3.4	U		150
PCB-156/157	0.00003	NotFnd	<4.6	4.6	U		300
PCB-169	0.03	NotFnd	<3.5	3.5	U		150
PCB-189	0.00003	NotFnd	<2.4	2.4	U		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	21.87	34	10-145
13C12-PCB-077	12000	22.18	39	10-145
13C12-PCB-123	12000	23.15	37	10-145
13C12-PCB-118	12000	23.31	36	10-145
13C12-PCB-114	12000	23.62	37	10-145
13C12-PCB-105	12000	23.97	43	10-145
13C12-PCB-126	12000	25.57	50	10-145
13C12-PCB-167	12000	26.44	45	10-145
13C12-PCB-156/157	24000	27.08	41	10-145
13C12-PCB-169	12000	28.75	56	10-145
13C12-PCB-189	12000	30.01	55	10-145
Field Spike Standards				
13C12-PCB-031	10000	15.86	95	70-130
13C12-PCB-095	10000	19.15	45	70-130
13C12-PCB-153	10000	24.23	91	70-130
Cleanup Standards				
13C12-PCB-028	12000	16.04	25	5-145
13C12-PCB-111	12000	22.08	39	10-145
13C12-PCB-178	12000	25.11	49	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.000561
Mid Point PCB TEQ	0.385
Upper Bound PCB TEQ	0.769

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

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Laboratory Method Blank Analysis Report

Sample Name	**Media Blank**	Sampling Date	n/a		Approved:
ALS Sample ID	WG3669684-1	Extraction Date	14-Dec-21		*N Ashtari*
Analysis Method	EPA 1668C	Sample Size	1	sample	--e-signature--
Analysis Type	Blank	Percent Moisture	n/a		21-Dec-2021
Sample Matrix	QC	Split Ratio	6		

Run Information	**Run 1**
Filename	5_211220A05
Run Date	20-Dec-21 14:10
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBOCTYL256001-02

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
PCB-081	0.0003	NotFnd	<5.8	5.8	U		150
PCB-077	0.0001	NotFnd	<6.2	6.2	U		150
PCB-123	0.00003	NotFnd	<6.8	6.8	U		150
PCB-118	0.00003	23.33	<13	6.6	J,R	13	150
PCB-114	0.00003	NotFnd	<6.7	6.7	U		150
PCB-105	0.00003	NotFnd	<6.8	6.8	U		150
PCB-126	0.1	NotFnd	<6.5	6.5	U		150
PCB-167	0.00003	NotFnd	<4.2	4.2	U		150
PCB-156/157	0.00003	27.13	<5.5	5.5	U	5.4	300
PCB-169	0.03	NotFnd	<4.5	4.5	U		150
PCB-189	0.00003	NotFnd	<3.5	3.5	U		150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**	
13C12-PCB-081	12000	21.89	31	10-145	
13C12-PCB-077	12000	22.20	32	10-145	
13C12-PCB-123	12000	23.16	33	10-145	
13C12-PCB-118	12000	23.33	34	10-145	
13C12-PCB-114	12000	23.63	35	10-145	
13C12-PCB-105	12000	23.99	36	10-145	
13C12-PCB-126	12000	25.59	43	10-145	
13C12-PCB-167	12000	26.47	39	10-145	
13C12-PCB-156/157	24000	27.10	39	10-145	
13C12-PCB-169	12000	28.78	50	10-145	R
13C12-PCB-189	12000	30.02	49	10-145	
Cleanup Standards					
13C12-PCB-028	12000	16.06	26	5-145	
13C12-PCB-111	12000	22.09	31	10-145	
13C12-PCB-178	12000	25.13	34	10-145	

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.00
Mid Point PCB TEQ	0.395
Upper Bound PCB TEQ	0.789

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

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Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a		Approved:
ALS Sample ID	WG3669684-2	Extraction Date	14-Dec-21		*N Ashtari*
Analysis Method	EPA 1668C	Sample Size	1	n/a	--e-signature--
Analysis Type	LCS	Percent Moisture	n/a		21-Dec-2021
Sample Matrix	QC	Split Ratio	6		

Run Information	**Run 1**
Filename	5_211220A03
Run Date	20-Dec-21 12:46
Final Volume	25 ul
Dilution Factor	1
Analysis Units	% Rec
Instrument - Column	HRMS-5 SPBOCTYL256001-02

Target Analytes	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
PCB-001	6000	8.99	108	60-135	
PCB-003	6000	10.54	100	60-135	
PCB-004	6000	10.68	105	60-135	
PCB-015	6000	14.38	101	60-135	
PCB-019	6000	12.67	104	60-135	
PCB-037	6000	18.33	97	60-135	
PCB-054	6000	14.51	104	60-135	
PCB-081	6000	21.90	102	60-135	
PCB-077	6000	22.21	103	60-135	
PCB-104	6000	17.56	93	60-135	
PCB-123	6000	23.17	99	60-135	
PCB-118	6000	23.34	102	60-135	
PCB-114	6000	23.64	99	60-135	
PCB-105	6000	23.99	94	60-135	
PCB-126	6000	25.60	92	60-135	
PCB-155	6000	20.56	97	60-135	
PCB-167	6000	26.48	93	60-135	
PCB-156/157	12000	27.11	91	60-135	
PCB-169	6000	28.78	94	60-135	
PCB-188	6000	23.56	97	60-135	
PCB-189	6000	30.03	100	60-135	
PCB-202	6000	26.32	101	60-135	
PCB-205	6000	31.42	96	60-135	
PCB-208	6000	29.74	95	60-135	
PCB-206	6000	32.46	93	60-135	
PCB-209	6000	33.57	106	60-135	
Extraction Standards		**Time**	**% Rec**	**Limits**	
13C12-PCB-001	12000	8.98	10	15-145	
13C12-PCB-003	12000	10.52	11	15-145	R
13C12-PCB-004	12000	10.66	9	15-145	
13C12-PCB-015	12000	14.36	17	15-145	
13C12-PCB-019	12000	12.65	8	15-145	
13C12-PCB-037	12000	18.32	26	15-145	
13C12-PCB-054	12000	14.50	9	15-145	
13C12-PCB-081	12000	21.88	32	40-145	
13C12-PCB-077	12000	22.20	35	40-145	
13C12-PCB-104	12000	17.55	15	40-145	
13C12-PCB-123	12000	23.16	37	40-145	
13C12-PCB-118	12000	23.33	36	40-145	
13C12-PCB-114	12000	23.63	39	40-145	
13C12-PCB-105	12000	23.98	42	40-145	
13C12-PCB-126	12000	25.59	51	40-145	
13C12-PCB-155	12000	20.55	25	40-145	
13C12-PCB-167	12000	26.47	46	40-145	
13C12-PCB-156/157	24000	27.10	44	40-145	
13C12-PCB-169	12000	28.76	56	40-145	
13C12-PCB-188	12000	23.54	29	40-145	
13C12-PCB-189	12000	30.02	51	40-145	
13C12-PCB-202	12000	26.31	38	40-145	
13C12-PCB-205	12000	31.40	45	40-145	
13C12-PCB-208	12000	29.73	44	40-145	
13C12-PCB-206	12000	32.45	45	40-145	
13C12-PCB-209	12000	33.55	44	40-145	
Cleanup Standards					
13C12-PCB-028	6000	16.05	38	15-145	
13C12-PCB-111	6000	22.09	71	40-145	
13C12-PCB-178	6000	25.13	78	40-145	

R Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2671585		Mlssissauga, ON L5J 2Y4
Date of Report	24-Jan-22		Canada
Date of Sample Receipt	10-Dec-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS: **PCB Congeners by EPA 1668C**

PCB Congener Group Totals and Total PCB are a sum of detected values, including EMPC values, consistent with USEPA CLP SOW CBC1.2

Certified by:

Ron McLeod, PhD
Director, Air Toxics & Special Chemistries, Life Sciences

Results in this certificate relate only to the samples as submitted to the laboratory.
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Sample Analysis Summary Report

Sample Name	21-22085-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2	21-22085-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2	21-22085-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2	21-22085-SVOC-(36 THRU 40) BLANK2
ALS Sample ID	L2671585-1	L2671585-2	L2671585-3	L2671585-4
Sample Size	1	1	1	1
Sample size units	Sample	Sample	Sample	Sample
Percent Moisture	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack
Sampling Date	9-Dec-21	9-Dec-21	10-Dec-21	10-Dec-21
Extraction Date	21-Dec-21	21-Dec-21	21-Dec-21	21-Dec-21
Target Analytes	**pg**	**pg**	**pg**	**pg**
PCB-081	<13	<14	<32	<12
PCB-077	175	312	189	30.7
PCB-123	<48	<97	69.7	<9.2
PCB-118	3750	7860	3140	375
PCB-114	70.1	180	<76	<9.0
PCB-105	1340	3120	875	132
PCB-126	<27	<44	<24	<26
PCB-167	54.3	110	<23	<6.9
PCB-156/157	171	342	<64	<11
PCB-169	<7.4	<10	<9.0	<7.5
PCB-189	<6.3	<5.1	<5.0	<3.4
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**
13C12-PCB-081	43	53	42	55
13C12-PCB-077	42	53	42	54
13C12-PCB-123	46	59	47	59
13C12-PCB-118	43	54	43	55
13C12-PCB-114	47	58	46	59
13C12-PCB-105	48	59	48	61
13C12-PCB-126	53	64	52	67
13C12-PCB-167	42	54	46	57
13C12-PCB-156/157	43	55	47	58
13C12-PCB-169	48	61	52	64
13C12-PCB-189	49	60	51	61
Field Spike Standards				
13C12-PCB-031	100	102	101	107
13C12-PCB-095	79	82	79	83
13C12-PCB-153	95	100	98	98
Cleanup Standards				
13C12-PCB-028	62	88	72	86
13C12-PCB-111	74	108	92	100
13C12-PCB-178	80	117	106	112
Toxic Equivalency - (WHO 2005)	**pg**	**pg**	**pg**	**pg**
Lower Bound PCB TEQ	0.179	0.380	0.141	0.0183
Mid Point PCB TEQ	3.10	4.93	2.69	2.73
Upper Bound PCB TEQ	3.11	5.09	2.83	2.85

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Quality Control Summary Report

Sample Name	Method Blank
ALS Sample ID	WG3673320-1
Sample Size	1
Sample size units	Sample
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	21-Dec-21

Target Analytes	pg
PCB-081	<13
PCB-077	<12
PCB-123	<12
PCB-118	<25
PCB-114	<12
PCB-105	<10
PCB-126	<11
PCB-167	<6.5
PCB-156/157	<8.1
PCB-169	<6.7
PCB-189	<4.7
Extraction Standards	**% Rec**
13C12-PCB-081	31
13C12-PCB-077	35
13C12-PCB-123	39
13C12-PCB-118	37
13C12-PCB-114	38
13C12-PCB-105	44
13C12-PCB-126	49
13C12-PCB-167	40
13C12-PCB-156/157	43
13C12-PCB-169	50
13C12-PCB-189	49
Cleanup Standards	
13C12-PCB-02B	45
13C12-PCB-111	66
13C12-PCB-178	70

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCB TEQ	0.00
Mid Point PCB TEQ	0.655
Upper Bound PCB TEQ	1.31

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Sample Analysis Summary Report

Sample Name	Laboratory Control Sample
ALS Sample ID	WG3673320-2
Sample Size	1
Sample size units	n/a
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	21-Dec-21
Target Analytes	**% Rec**
PCB-081	107
PCB-077	107
PCB-123	102
PCB-118	104
PCB-114	99
PCB-105	99
PCB-126	93
PCB-167	93
PCB-156/157	87
PCB-169	92
PCB-189	103
Extraction Standards	**% Rec**
13C12-PCB-081	29
13C12-PCB-077	30
13C12-PCB-123	34
13C12-PCB-118	33
13C12-PCB-114	33
13C12-PCB-105	37
13C12-PCB-126	40
13C12-PCB-167	34
13C12-PCB-156/157	36
13C12-PCB-169	39
13C12-PCB-189	38
Cleanup Standards	
13C12-PCB-028	59
13C12-PCB-111	61
13C12-PCB-178	64

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Sample Analysis Report

Sample Name	**21-22085-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2**	Sampling Date	9-Dec-21		Approved:
ALS Sample ID	L2671585-1	Extraction Date	21-Dec-21		*N.Vithanage*
Analysis Method	EPA 1668C	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		24-Jan-2022
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	5-220110A07
Run Date	10-Jan-22 18:12
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-05 SPBOCTYL256001_02

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**LQL**
PCB-081	0.0003	NotFnd	<13	13	U	150
PCB-077	0.0001	22.15	175	14		150
PCB-123	0.00003	23.11	<48	12	M,J,R	150
PCB-118	0.00003	23.29	3750	12		150
PCB-114	0.00003	23.59	70.1	11	J	150
PCB-105	0.00003	23.94	1340	12		150
PCB-126	0.1	25.55	<27	12	M,J,R	150
PCB-167	0.00003	26.41	54.3	6.3	J	150
PCB-156/157	0.00003	27.04	171	8.2	J	300
PCB-169	0.03	28.70	<7.4	6.9	M,J,R	150
PCB-189	0.00003	29.95	<6.3	3.7	J,R	150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**
13C12-PCB-081	12000	21.84	43	10-145
13C12-PCB-077	12000	22.14	42	10-145
13C12-PCB-123	12000	23.11	46	10-145
13C12-PCB-118	12000	23.28	43	10-145
13C12-PCB-114	12000	23.58	47	10-145
13C12-PCB-105	12000	23.93	48	10-145
13C12-PCB-126	12000	25.53	53	10-145
13C12-PCB-167	12000	26.41	42	10-145
13C12-PCB-156/157	24000	27.04	43	10-145
13C12-PCB-169	12000	28.70	48	10-145
13C12-PCB-189	12000	29.95	49	10-145
Field Spike Standards				
13C12-PCB-031	10000	15.85	100	70-130
13C12-PCB-095	10000	19.14	79	70-130
13C12-PCB-153	10000	24.20	95	70-130
Cleanup Standards				
13C12-PCB-028	6000	16.03	62	5-145
13C12-PCB-111	6000	22.05	74	10-145
13C12-PCB-178	6000	25.08	80	10-145

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.179
Mid Point PCB TEQ	3.10
Upper Bound PCB TEQ	3.11

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**21-22085-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2**	Sampling Date	9-Dec-21		Approved:
ALS Sample ID	L2671585-2	Extraction Date	21-Dec-21		*N.Vithanage*
Analysis Method	EPA 1668C	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		24-Jan-2022
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	5-220110A08
Run Date	10-Jan-22 18:54
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-05 SPBOCTYL256001_02

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**LQL**
PCB-081	0.0003	NotFnd	<14	14	U	150
PCB-077	0.0001	22.15	312	14		150
PCB-123	0.00003	23.11	<97	16	M,J,R	150
PCB-118	0.00003	23.29	7860	16		150
PCB-114	0.00003	23.59	180	16		150
PCB-105	0.00003	23.94	3120	16		150
PCB-126	0.1	25.55	<44	18	M,J,R	150
PCB-167	0.00003	26.41	110	9.4	J	150
PCB-156/157	0.00003	27.04	342	13		300
PCB-169	0.03	NotFnd	<10	10	U	150
PCB-189	0.00003	NotFnd	<5.1	5.1	U	150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**	
13C12-PCB-081	12000	21.84	53	10-145	
13C12-PCB-077	12000	22.14	53	10-145	
13C12-PCB-123	12000	23.11	59	10-145	
13C12-PCB-118	12000	23.28	54	10-145	
13C12-PCB-114	12000	23.58	58	10-145	
13C12-PCB-105	12000	23.93	59	10-145	
13C12-PCB-126	12000	25.53	64	10-145	
13C12-PCB-167	12000	26.40	54	10-145	
13C12-PCB-156/157	24000	27.04	55	10-145	
13C12-PCB-169	12000	28.69	61	10-145	R
13C12-PCB-189	12000	29.95	60	10-145	
Field Spike Standards					
13C12-PCB-031	10000	15.84	102	70-130	
13C12-PCB-095	10000	19.14	82	70-130	
13C12-PCB-153	10000	24.20	100	70-130	
Cleanup Standards					
13C12-PCB-028	6000	16.02	88	5-145	
13C12-PCB-111	6000	22.04	108	10-145	
13C12-PCB-178	6000	25.08	117	10-145	

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.380
Mid Point PCB TEQ	4.93
Upper Bound PCB TEQ	5.09

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**21-22085-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2**	Sampling Date	10-Dec-21		Approved:
ALS Sample ID	L2671585-3	Extraction Date	21-Dec-21		*N.Vithanage*
Analysis Method	EPA 1668C	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		24-Jan-2022
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	5-220110A09
Run Date	10-Jan-22 19:36
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-05 SPBOCTYL256001_02

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**LQL**
PCB-081	0.0003	NotFnd	<32	32	U	150
PCB-077	0.0001	22.15	189	32		150
PCB-123	0.00003	23.11	69.7	13	J	150
PCB-118	0.00003	23.29	3140	13		150
PCB-114	0.00003	23.58	<76	13	M,J,R	150
PCB-105	0.00003	23.93	875	12		150
PCB-126	0.1	25.49	<24	13	M,J,R	150
PCB-167	0.00003	26.41	<23	8.2	M,J,R	150
PCB-156/157	0.00003	27.04	<64	11	M,J,R	300
PCB-169	0.03	NotFnd	<9.0	9.0	U	150
PCB-189	0.00003	NotFnd	<5.0	5.0	U	150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**	
13C12-PCB-081	12000	21.83	42	10-145	
13C12-PCB-077	12000	22.13	42	10-145	
13C12-PCB-123	12000	23.11	47	10-145	
13C12-PCB-118	12000	23.28	43	10-145	
13C12-PCB-114	12000	23.57	46	10-145	
13C12-PCB-105	12000	23.92	48	10-145	
13C12-PCB-126	12000	25.53	52	10-145	
13C12-PCB-167	12000	26.40	46	10-145	
13C12-PCB-156/157	24000	27.02	47	10-145	
13C12-PCB-169	12000	28.69	52	10-145	R
13C12-PCB-189	12000	29.94	51	10-145	
Field Spike Standards					
13C12-PCB-031	10000	15.84	101	70-130	
13C12-PCB-095	10000	19.13	79	70-130	
13C12-PCB-153	10000	24.20	98	70-130	
Cleanup Standards					
13C12-PCB-028	6000	16.02	72	5-145	
13C12-PCB-111	6000	22.04	92	10-145	
13C12-PCB-178	6000	25.07	106	10-145	

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.141
Mid Point PCB TEQ	2.69
Upper Bound PCB TEQ	2.83

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor **TEQ** Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**21-22085-SVOC-(36 THRU 40) BLANK2**	Sampling Date	10-Dec-21		Approved:
ALS Sample ID	L2671585-4	Extraction Date	21-Dec-21		*N.Vithanage*
Analysis Method	EPA 1668C	Sample Size	1	Sample	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		24-Jan-2022
Sample Matrix	Stack	Split Ratio	6		

Run Information	**Run 1**
Filename	5-220110A10
Run Date	10-Jan-22 20:19
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-05 SPBOCTYL256001_02

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**LQL**
PCB-081	0.0003	NotFnd	<12	12	U	150
PCB-077	0.0001	22.16	30.7	13	M,J	150
PCB-123	0.00003	23.12	<9.2	8.8	M,J,R	150
PCB-118	0.00003	23.30	375	8.9		150
PCB-114	0.00003	23.59	<9.0	8.5	M,J,R	150
PCB-105	0.00003	23.94	132	8.5	J	150
PCB-126	0.1	25.50	<26	9.1	M,J,R	150
PCB-167	0.00003	NotFnd	<6.9	6.9	U	150
PCB-156/157	0.00003	27.04	<11	9.1	M,J,R	300
PCB-169	0.03	NotFnd	<7.5	7.5	U	150
PCB-189	0.00003	NotFnd	<3.4	3.4	U	150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**	
13C12-PCB-081	12000	21.84	55	10-145	
13C12-PCB-077	12000	22.14	54	10-145	
13C12-PCB-123	12000	23.11	59	10-145	
13C12-PCB-118	12000	23.28	55	10-145	
13C12-PCB-114	12000	23.58	59	10-145	
13C12-PCB-105	12000	23.93	61	10-145	
13C12-PCB-126	12000	25.53	67	10-145	
13C12-PCB-167	12000	26.41	57	10-145	
13C12-PCB-156/157	24000	27.04	58	10-145	
13C12-PCB-169	12000	28.70	64	10-145	R
13C12-PCB-189	12000	29.95	61	10-145	
Field Spike Standards					
13C12-PCB-031	10000	15.85	107	70-130	
13C12-PCB-095	10000	19.14	83	70-130	
13C12-PCB-153	10000	24.20	98	70-130	
Cleanup Standards					
13C12-PCB-028	6000	16.03	86	5-145	
13C12-PCB-111	6000	22.05	100	10-145	
13C12-PCB-178	6000	25.08	112	10-145	

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.0183
Mid Point PCB TEQ	2.73
Upper Bound PCB TEQ	2.85

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

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Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a		
ALS Sample ID	WG3673320-1	Extraction Date	21-Dec-21		Approved:
Analysis Method	EPA 1668C	Sample Size	1	Sample	*N.Vithanage*
Analysis Type	Blank	Percent Moisture	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	6		24-Jan-2022

Run Information	**Run 1**
Filename	5-220111A07
Run Date	11-Jan-22 17:14
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-05 SPBOCTYL256001_02

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**LQL**
PCB-081	0.0003	NotFnd	<13	13	U	150
PCB-077	0.0001	NotFnd	<12	12	U	150
PCB-123	0.00003	NotFnd	<12	12	U	150
PCB-118	0.00003	23.27	<25	11	M,J,R	150
PCB-114	0.00003	NotFnd	<12	12	U	150
PCB-105	0.00003	NotFnd	<10	10	U	150
PCB-126	0.1	NotFnd	<11	11	U	150
PCB-167	0.00003	NotFnd	<6.5	6.5	U	150
PCB-156/157	0.00003	NotFnd	<8.1	8.1	U	300
PCB-169	0.03	NotFnd	<6.7	6.7	U	150
PCB-189	0.00003	NotFnd	<4.7	4.7	U	150

Extraction Standards	**pg**	**Time**	**% Rec**	**Limits**	
13C12-PCB-081	12000	21.84	31	10-145	
13C12-PCB-077	12000	22.14	35	10-145	
13C12-PCB-123	12000	23.10	39	10-145	
13C12-PCB-118	12000	23.28	37	10-145	
13C12-PCB-114	12000	23.58	38	10-145	
13C12-PCB-105	12000	23.92	44	10-145	
13C12-PCB-126	12000	25.51	49	10-145	
13C12-PCB-167	12000	26.40	40	10-145	
13C12-PCB-156/157	24000	27.02	43	10-145	
13C12-PCB-169	12000	28.69	50	10-145	M
13C12-PCB-189	12000	29.94	49	10-145	
Field Spike Standards					
13C12-PCB-031	0		NS		
13C12-PCB-095	0		NS		
13C12-PCB-153	0		NS		
Cleanup Standards					
13C12-PCB-028	6000	16.02	45	5-145	
13C12-PCB-111	6000	22.04	66	10-145	
13C12-PCB-178	6000	25.07	70	10-145	

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.00
Mid Point PCB TEQ	0.655
Upper Bound PCB TEQ	1.31

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identifed. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
NS	Indicates that this standard has not been added
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

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Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a		
ALS Sample ID	WG3673320-2	Extraction Date	21-Dec-21		Approved:
Analysis Method	EPA 1668C	Sample Size	1	n/a	*N.Vithanage*
Analysis Type	LCS	Percent Moisture	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	6		24-Jan-2022

Run Information	**Run 1**
Filename	5-220110A03
Run Date	10-Jan-22 15:25
Final Volume	25 ul
Dilution Factor	1
Analysis Units	% Rec
Instrument - Column	HRMS-05 SPBOCTYL256001_02

Target Analytes	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
PCB-081	6000	21.87	107	60-135	
PCB-077	6000	22.18	107	60-135	
PCB-123	6000	23.15	102	60-135	
PCB-118	6000	23.31	104	60-135	
PCB-114	6000	23.62	99	60-135	
PCB-105	6000	23.97	99	60-135	
PCB-126	6000	25.56	93	60-135	
PCB-167	6000	26.43	93	60-135	
PCB-156/157	12000	27.06	87	60-135	
PCB-169	6000	28.73	92	60-135	
PCB-189	6000	29.98	103	60-135	
Extraction Standards		**Time**	**% Rec**	**Limits**	
13C12-PCB-081	12000	21.86	29	40-145	
13C12-PCB-077	12000	22.16	30	40-145	
13C12-PCB-123	12000	23.13	34	40-145	
13C12-PCB-118	12000	23.30	33	40-145	
13C12-PCB-114	12000	23.60	33	40-145	
13C12-PCB-105	12000	23.95	37	40-145	
13C12-PCB-126	12000	25.55	40	40-145	
13C12-PCB-167	12000	26.42	34	40-145	
13C12-PCB-156/157	24000	27.06	36	40-145	
13C12-PCB-169	12000	28.72	39	40-145	
13C12-PCB-189	12000	29.96	38	40-145	
Field Spike Standards					
13C12-PCB-031	0		NS		
13C12-PCB-095	0		NS		
13C12-PCB-153	0		NS		
Cleanup Standards					
13C12-PCB-028	6000	16.05	59	15-145	
13C12-PCB-111	6000	22.07	61	40-145	
13C12-PCB-178	6000	25.09	64	40-145	

NS Indicates that this standard has not been added

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1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
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Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	Ortech Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Rd.
ALS WO#:	L2669132		Mississauga, ON L5J 2Y4
Date of Report	21-Dec-21		Canada
Date of Sample Receipt	3-Dec-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS: **CB by LRGC/MS - Isotope dilution**

Certified by:

Ron McLeod, Ph.D.
Technical Director

Results in this certificate relate only to the samples as submitted to the laboratory.
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Sample Analysis Summary Report

Sample Name	Media Blank		21-22085-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1		21-22085-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1		21-22085-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1		21-22085-SVOC-(16 THRU 20) BLANK1	
ALS Sample ID	WG3669684-1		L2669132-1		L2669132-2		L2669132-3		L2669132-4	
Sample Size	1		1		1		1		1	
Sample units	sample		sample		sample		sample		sample	
Moisture Content	n/a		n/a		n/a		n/a		n/a	
Matrix	QC		Stack		Stack		Stack		Stack	
Sampling Date	n/a		1-Dec-21		1-Dec-21		2-Dec-21		2-Dec-21	
Extraction Date	14-Dec-21		14-Dec-21		14-Dec-21		14-Dec-21		14-Dec-21	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**	
Chlorobenzene	<12	U	1070		329	R	1180		<12	U
1,3-Dichlorobenzene	<12	U	105		148		124		<12	U
1,4-Dichlorobenzene	<12	U	79		74.3		80.3		<12	U
1,2-Dichlorobenzene	<12	U	85		107		93.1		<12	U
1,3,5-Trichlorobenzene	<12	U	12.7		<12	U	12.2		<12	U
1,2,4-Trichlorobenzene	<12	U	<12	U	45.5		36.7		<12	U
1,2,3-Trichlorobenzene	<12	U	<12	U	18.1		18.7		<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<12	U	<12	U	<12	U	<12	U	<12	U
1,2,3,4-Tetrachlorobenzene	<12	U	<12	U	<12	U	<12	U	<12	U
Pentachlorobenzene	<12	U	<12	U	<12	U	<12	U	<12	U
Hexachlorobenzene	<12	U	<12	U	<12	U	<12	U	<12	U
Field Sampling Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	NS		90		82		85		81	
Extraction Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	
13C6-Chlorobenzene	42		27		4		42		34	
13C6-1,4-Dichlorobenzene	93		83		52		106		103	
13C6-1,2,3-Trichlorobenzene	93		88		60		111		118	
13C6-1,2,3,4-Tetrachlorobenzene	84		60		66		65		65	
13C6-Pentachlorobenzene	89		62		71		70		69	
13C6-Hexachlorobenzene	95		63		71		66		69	

U	Indicates that this compound was not detected above the LOD.
NS	Indicates that this compound was not spiked in
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Laboratory Control Sample (300ng)	Laboratory Control Sample (30 ng)	
ALS Sample ID	WG3669684-2	WG3669684-5	
Sample Size	1	1	
Sample units	n/a	n/a	
Moisture Content	n/a	n/a	
Matrix	QC	QC	
Sampling Date	n/a	n/a	
Extraction Date	14-Dec-21	14-Dec-21	
Target Analytes	**% Recovery**	**% Recovery**	
Chlorobenzene	NS	NS	
1,3-Dichlorobenzene	93	87	
1,4-Dichlorobenzene	92	102	
1,2-Dichlorobenzene	96	87	
1,3,5-Trichlorobenzene	85	99	
1,2,4-Trichlorobenzene	83	88	
1,2,3-Trichlorobenzene	84	88	
1,2,3,5/1,2,4,5-Tetrachlorobenzene	94	102	
1,2,3,4-Tetrachlorobenzene	90	97	
Pentachlorobenzene	100	107	
Hexachlorobenzene	91	106	M
Field Sampling Standards	**%Rec**	**%Rec**	
1-Bromo-2,3-Dichlorobenzene	NS	NS	
Extraction Standards	**%Rec**	**%Rec**	
13C6-Chlorobenzene	33	54	
13C6-1,4-Dichlorobenzene	78	102	
13C6-1,2,3-Trichlorobenzene	100	108	
13C6-1,2,3,4-Tetrachlorobenzene	69	85	
13C6-Pentachlorobenzene	73	104	
13C6-Hexachlorobenzene	79	113	

M	Indicates that a peak has been manually integrated.
NS	Indicates that this compound was not spiked in

ALS Life Sciences

Sample Analysis Report

Sample Name	**Media Blank**	Sampling Date	n/a
ALS Sample ID	WG3669684-1	Extraction Date	14-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
21-Dec-2021

Run Information	**Run 1**
Filename	21121975.D
Run Date	12/20/2021 14:29
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	NotFnd	<12	U
1,3-Dichlorobenzene	NotFnd	<12	U
1,4-Dichlorobenzene	6.96	<12	U
1,2-Dichlorobenzene	NotFnd	<12	U
1,3,5-Trichlorobenzene	NotFnd	<12	U
1,2,4-Trichlorobenzene	NotFnd	<12	U
1,2,3-Trichlorobenzene	NotFnd	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	NotFnd	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	NotFnd	<12	U
Hexachlorobenzene	NotFnd	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-Dichlorobenzene			NS

Extraction Standards			**%Rec**
13C6-Chlorobenzene	300	4.70	42
13C6-1,4-Dichlorobenzene	300	6.96	93
13C6-1,2,3-Trichlorobenzene	300	9.34	93
13C6-1,2,3,4-Tetrachlorobenzene	300	11.06	84
13C6-Pentachlorobenzene	300	12.43	89
13C6-Hexachlorobenzene	300	14.06	95

U	Indicates that this compound was not detected above the MDL.
NS	Indicates that this compound was not spiked in

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1**	Sampling Date	1-Dec-21
ALS Sample ID	L2669132-1	Extraction Date	14-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
21-Dec-2021

Run Information	**Run 1**
Filename	21121978.D
Run Date	12/20/2021 15:32
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.65	1070	
1,3-Dichlorobenzene	6.89	105	
1,4-Dichlorobenzene	6.97	79	
1,2-Dichlorobenzene	7.26	85	
1,3,5-Trichlorobenzene	8.42	12.7	
1,2,4-Trichlorobenzene	NotFnd	<12	U
1,2,3-Trichlorobenzene	9.34	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.55	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	12.40	<12	U
Hexachlorobenzene	14.03	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	600	10.35	90	

Extraction Standards			**%Rec**		
13C6-Chlorobenzene	300	4.65	27	M	R
13C6-1,4-Dichlorobenzene	300	6.97	83		
13C6-1,2,3-Trichlorobenzene	300	9.34	88		
13C6-1,2,3,4-Tetrachlorobenzene	300	11.06	60		
13C6-Pentachlorobenzene	300	12.40	62		
13C6-Hexachlorobenzene	300	14.04	63		

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1**	Sampling Date	1-Dec-21
ALS Sample ID	L2669132-2	Extraction Date	14-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
21-Dec-2021

Run Information	**Run 1**
Filename	21121979.D
Run Date	12/20/2021 15:53
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.67	329	R
1,3-Dichlorobenzene	7.11	148	
1,4-Dichlorobenzene	7.17	74.3	
1,2-Dichlorobenzene	7.43	107	
1,3,5-Trichlorobenzene	NotFnd	<12	U
1,2,4-Trichlorobenzene	8.96	45.5	
1,2,3-Trichlorobenzene	9.36	18.1	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.55	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	NotFnd	<12	U
Hexachlorobenzene	NotFnd	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	600	10.35	82	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.67	4	R
13C6-1,4-Dichlorobenzene	300	7.17	52	
13C6-1,2,3-Trichlorobenzene	300	9.35	60	
13C6-1,2,3,4-Tetrachlorobenzene	300	11.05	66	
13C6-Pentachlorobenzene	300	12.39	71	
13C6-Hexachlorobenzene	300	14.03	71	

U	Indicates that this compound was not detected above the MDL.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1**	Sampling Date	2-Dec-21
ALS Sample ID	L2669132-3	Extraction Date	14-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
21-Dec-2021

Run Information	**Run 1**
Filename	21121980.D
Run Date	12/20/2021 16:13
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.70	1180	
1,3-Dichlorobenzene	6.89	124	
1,4-Dichlorobenzene	6.96	80.3	
1,2-Dichlorobenzene	7.25	93.1	
1,3,5-Trichlorobenzene	8.41	12.2	
1,2,4-Trichlorobenzene	8.94	36.7	
1,2,3-Trichlorobenzene	9.34	18.7	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	NotFnd	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	12.40	<12	U
Hexachlorobenzene	NotFnd	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-Dichlorobenzene	600	10.35	85

Extraction Standards			**%Rec**
13C6-Chlorobenzene	300	4.69	42
13C6-1,4-Dichlorobenzene	300	6.96	106
13C6-1,2,3-Trichlorobenzene	300	9.34	111
13C6-1,2,3,4-Tetrachlorobenzene	300	11.06	65
13C6-Pentachlorobenzene	300	12.40	70
13C6-Hexachlorobenzene	300	14.04	66

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-SVOC-(16 THRU 20) BLANK1**	Sampling Date	2-Dec-21
ALS Sample ID	L2669132-4	Extraction Date	14-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
21-Dec-2021

Run Information	**Run 1**
Filename	21121977.D
Run Date	12/20/2021 15:11
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	NotFnd	<12	U
1,3-Dichlorobenzene	NotFnd	<12	U
1,4-Dichlorobenzene	6.98	<12	U
1,2-Dichlorobenzene	NotFnd	<12	U
1,3,5-Trichlorobenzene	NotFnd	<12	U
1,2,4-Trichlorobenzene	NotFnd	<12	U
1,2,3-Trichlorobenzene	NotFnd	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	NotFnd	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	NotFnd	<12	U
Hexachlorobenzene	NotFnd	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	600	10.36	81	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.69	34	M
13C6-1,4-Dichlorobenzene	300	6.97	103	
13C6-1,2,3-Trichlorobenzene	300	9.34	118	
13C6-1,2,3,4-Tetrachlorobenzene	300	11.06	65	
13C6-Pentachlorobenzene	300	12.40	69	
13C6-Hexachlorobenzene	300	14.04	69	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample (300ng)**	Sampling Date	n/a
ALS Sample ID	WG3669684-2	Extraction Date	14-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
21-Dec-2021

Run Information	**Run 1**
Filename	21121973.D
Run Date	12/20/2021 13:48
Final Volume	1 mL
Dilution Factor	1
Analysis Units	n/a
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**
Chlorobenzene			NS	
1,3-Dichlorobenzene	300	6.90	93	
1,4-Dichlorobenzene	300	6.97	92	
1,2-Dichlorobenzene	300	7.26	96	
1,3,5-Trichlorobenzene	300	8.42	85	
1,2,4-Trichlorobenzene	300	8.94	83	
1,2,3-Trichlorobenzene	300	9.35	84	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	600	10.57	94	
1,2,3,4-Tetrachlorobenzene	300	11.06	90	
Pentachlorobenzene	300	12.42	100	
Hexachlorobenzene	300	14.05	91	
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene			NS	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.66	33	
13C6-1,4-Dichlorobenzene	300	6.97	78	
13C6-1,2,3-Trichlorobenzene	300	9.35	100	R
13C6-1,2,3,4-Tetrachlorobenzene	300	11.06	69	
13C6-Pentachlorobenzene	300	12.42	73	
13C6-Hexachlorobenzene	300	14.05	79	

M	Indicates that a peak has been manually integrated.
NS	Indicates that this compound was not spiked in
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample (30 ng)**	Sampling Date	n/a
ALS Sample ID	WG3669684-5	Extraction Date	14-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
21-Dec-2021

Run Information	**Run 1**
Filename	21121972.D
Run Date	12/20/2021 13:27
Final Volume	1 mL
Dilution Factor	1
Analysis Units	n/a
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**
Chlorobenzene			NS	
1,3-Dichlorobenzene	30	6.89	87	
1,4-Dichlorobenzene	30	6.96	102	
1,2-Dichlorobenzene	30	7.25	87	
1,3,5-Trichlorobenzene	30	8.42	99	
1,2,4-Trichlorobenzene	30	8.94	88	
1,2,3-Trichlorobenzene	30	9.35	88	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	60	10.57	102	
1,2,3,4-Tetrachlorobenzene	30	11.07	97	
Pentachlorobenzene	30	12.44	107	
Hexachlorobenzene	30	14.07	106	M
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene			NS	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.68	54	
13C6-1,4-Dichlorobenzene	300	6.96	102	
13C6-1,2,3-Trichlorobenzene	300	9.34	108	
13C6-1,2,3,4-Tetrachlorobenzene	300	11.06	85	R
13C6-Pentachlorobenzene	300	12.45	104	M
13C6-Hexachlorobenzene	300	14.07	113	

M	Indicates that a peak has been manually integrated.
NS	Indicates that this compound was not spiked in
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Rd.
ALS WO#:	L2671585		Mississauga, ON L5J 2Y4
Date of Report	28-Jan-22		Canada
Date of Sample Receipt	10-Dec-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS: **CB by LRGC/MS - Isotope dilution**

Very low to nil recoveries were observed for Chlorobenzene-13C6. Where there were measueable recoveries, the chlorobenezene levels in the samples have been estimated.

Certified by:

Ron McLeod, Ph.D.
Director, Air Toxics & Special Chemistries, Life Sciences

Results in this certificate relate only to the samples as submitted to the laboratory.
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ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		21-22085-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2		21-22085-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2		21-22085-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2		21-22085-SVOC-(36 THRU 40) BLANK2		Laboratory Control Sample	
ALS Sample ID	WG3673320-1		L2671585-1		L2671585-2		L2671585-3		L2671585-4		WG3673320-2	
Sample Size	1		1		1		1		1		1	
Sample units	sample		sample		sample		sample		sample		n/a	
Moisture Content	n/a		n/a		n/a		n/a		n/a		n/a	
Matrix	QC		Stack		Stack		Stack		Stack		QC	
Sampling Date	n/a		9-Dec-21		9-Dec-21		10-Dec-21		10-Dec-21		n/a	
Extraction Date	21-Dec-22		21-Dec-22		21-Dec-22		21-Dec-22		21-Dec-22		21-Dec-22	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**% Recovery**	
Chlorobenzene	<12	U	226	EST	NQ		280	EST	NQ		NS	
1,3-Dichlorobenzene	<12	U	113		166		144		<12	U	76	M
1,4-Dichlorobenzene	53.4		62.2	M	75.8	M	57.5	M	63.7		81	M
1,2-Dichlorobenzene	<12	U	119		125		118	M	<12	U	109	
1,3,5-Trichlorobenzene	<12	U	14.3		16		13		<12	U	85	
1,2,4-Trichlorobenzene	<12	U	32.6		33.5		32.8		<12	U	146	
1,2,3-Trichlorobenzene	<12	U	<12	U	12.4		<12	U	<12	U	92	
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<12	U	<12	U	<12	U	<12	U	<12	U	88	
1,2,3,4-Tetrachlorobenzene	<12	U	<12	U	<12	U	<12	U	<12	U	88	
Pentachlorobenzene	<12	U	<12	U	<12	U	<12	U	<12	U	90	
Hexachlorobenzene	<12	U	<12	U	<12	U	<12	U	<12	U	87	
Field Sampling Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	NS		91		104		105		103		NS	
Extraction Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	
13C6-Chlorobenzene	1		1		NQ		1		NQ		1	
13C6-1,4-Dichlorobenzene	11		34		20		23		10		30	
13C6-1,2,3-Trichlorobenzene	42		83		62		58		58		77	
13C6-1,2,3,4-Tetrachlorobenzene	40		33		59		58		62		74	
13C6-Pentachlorobenzene	46		35		63		62		74		77	
13C6-Hexachlorobenzene	53		39		69		66		87		78	

U	Indicates that this compound was not detected above the LOD.
M	Indicates that a peak has been manually integrated.
NS	Indicates that this compound was not spiked in.
EST	Indicates that this is an estimated value and may be biased due to extraction standard losses
NQ	Indicates that this compound cannot be quantified due to losses of the associated extraction standard.

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Laboratory Control Sample	
ALS Sample ID	WG3673320-5	
Sample Size	1	
Sample units	n/a	
Moisture Content	n/a	
Matrix	QC	
Sampling Date	n/a	
Extraction Date	21-Dec-22	
Target Analytes	**% Recovery**	
Chlorobenzene	NS	
1,3-Dichlorobenzene	83	
1,4-Dichlorobenzene	98	M,R
1,2-Dichlorobenzene	82	
1,3,5-Trichlorobenzene	95	
1,2,4-Trichlorobenzene	142	M
1,2,3-Trichlorobenzene	96	
1,2,3,5/1,2,4,5-Tetrachlorobenzene	75	M
1,2,3,4-Tetrachlorobenzene	70	M
Pentachlorobenzene	87	
Hexachlorobenzene	102	
Field Sampling Standards	**%Rec**	
1-Bromo-2,3-Dichlorobenzene	NS	
Extraction Standards	**%Rec**	
13C6-Chlorobenzene	1	
13C6-1,4-Dichlorobenzene	21	
13C6-1,2,3-Trichlorobenzene	56	
13C6-1,2,3,4-Tetrachlorobenzene	60	
13C6-Pentachlorobenzene	60	
13C6-Hexachlorobenzene	66	

M	Indicates that a peak has been manually integrated.
NS	Indicates that this compound was not spiked in.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG3673320-1	Extraction Date	21-Dec-22
Analysis Method	SIM GC/MS		
Analysis Type	blank		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Peter Nguyen
--e-signature--
26-Jan-2022

Run Information	**Run 1**
Filename	CB22012525.D
Run Date	1/25/2022 20:34
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	NotFnd	<12	U
1,3-Dichlorobenzene	NotFnd	<12	U
1,4-Dichlorobenzene	6.86	53.4	
1,2-Dichlorobenzene	NotFnd	<12	U
1,3,5-Trichlorobenzene	NotFnd	<12	U
1,2,4-Trichlorobenzene	NotFnd	<12	U
1,2,3-Trichlorobenzene	NotFnd	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	NotFnd	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	NotFnd	<12	U
Hexachlorobenzene	13.98	<12	U

Field Sampling Standards	**ng spiked**	**%Rec**
1-Bromo-2,3-Dichlorobenzene		NS

Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.58	1	M
13C6-1,4-Dichlorobenzene	300	6.86	11	
13C6-1,2,3-Trichlorobenzene	300	9.28	42	
13C6-1,2,3,4-Tetrachlorobenzene	600	10.99	40	
13C6-Pentachlorobenzene	600	12.34	46	
13C6-Hexachlorobenzene	600	13.97	53	

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
NS	Indicates that this compound was not spiked in

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2**	Sampling Date	9-Dec-21
ALS Sample ID	L2671585-1	Extraction Date	21-Dec-22
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Peter Nguyen
--e-signature--
26-Jan-2022

Run Information	**Run 1**
Filename	CB22012527.D
Run Date	1/25/2022 21:16
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.57	226	EST
1,3-Dichlorobenzene	6.77	113	
1,4-Dichlorobenzene	6.86	62.2	M
1,2-Dichlorobenzene	7.16	119	
1,3,5-Trichlorobenzene	8.35	14.3	
1,2,4-Trichlorobenzene	8.87	32.6	
1,2,3-Trichlorobenzene	9.28	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.50	<12	U
1,2,3,4-Tetrachlorobenzene	10.99	<12	U
Pentachlorobenzene	12.34	<12	U
Hexachlorobenzene	13.98	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	600	10.29	91	

Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.58	1	M
13C6-1,4-Dichlorobenzene	300	6.85	34	
13C6-1,2,3-Trichlorobenzene	300	9.28	83	
13C6-1,2,3,4-Tetrachlorobenzene	600	10.99	33	
13C6-Pentachlorobenzene	600	12.34	35	
13C6-Hexachlorobenzene	600	13.97	39	

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
EST	Indicates that this is an estimated value and may be biased due to extraction standard losses

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2**	Sampling Date	9-Dec-21
ALS Sample ID	L2671585-2	Extraction Date	21-Dec-22
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Peter Nguyen
--e-signature--
26-Jan-2022

Run Information	**Run 1**
Filename	CB22012528.D
Run Date	1/25/2022 21:36
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene		NQ	
1,3-Dichlorobenzene	6.77	166	
1,4-Dichlorobenzene	6.85	75.8	M
1,2-Dichlorobenzene	7.16	125	
1,3,5-Trichlorobenzene	8.35	16	
1,2,4-Trichlorobenzene	8.87	33.5	
1,2,3-Trichlorobenzene	9.28	12.4	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.49	<12	U
1,2,3,4-Tetrachlorobenzene	10.99	<12	U
Pentachlorobenzene	12.34	<12	U
Hexachlorobenzene	13.97	<12	U
Field Sampling Standards	**ng spiked**	**%Rec**	
1-Bromo-2,3-Dichlorobenzene	600 10.29	104	
Extraction Standards		**%Rec**	
13C6-Chlorobenzene	300 4.58	NQ	
13C6-1,4-Dichlorobenzene	300 6.85	20	
13C6-1,2,3-Trichlorobenzene	300 9.28	62	
13C6-1,2,3,4-Tetrachlorobenzene	300 10.99	59	
13C6-Pentachlorobenzene	300 12.34	63	
13C6-Hexachlorobenzene	300 13.97	69	

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
NQ	Indicates that this compound cannot be quantified due to losses of the associated extraction standard.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2**	Sampling Date	10-Dec-21
ALS Sample ID	L2671585-3	Extraction Date	21-Dec-22
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Peter Nguyen
--e-signature--
26-Jan-2022

Run Information	**Run 1**
Filename	CB22012529.D
Run Date	1/25/2022 21:57
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.57	280	EST
1,3-Dichlorobenzene	6.77	144	
1,4-Dichlorobenzene	6.85	57.5 M	
1,2-Dichlorobenzene	7.16	118 M	
1,3,5-Trichlorobenzene	8.34	13	
1,2,4-Trichlorobenzene	8.87	32.8	
1,2,3-Trichlorobenzene	9.28	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.49	<12	U
1,2,3,4-Tetrachlorobenzene	11.00	<12	U
Pentachlorobenzene	12.34	<12	U
Hexachlorobenzene	13.98	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-Dichlorobenzene	600	10.29	105

Extraction Standards			**%Rec**
13C6-Chlorobenzene	300	4.58	1 M
13C6-1,4-Dichlorobenzene	300	6.85	23
13C6-1,2,3-Trichlorobenzene	300	9.28	58
13C6-1,2,3,4-Tetrachlorobenzene	300	10.99	58
13C6-Pentachlorobenzene	300	12.34	62
13C6-Hexachlorobenzene	300	13.97	66

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
EST	Indicates that this is an estimated value and may be biased due to extraction standard losses

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-SVOC-(36 THRU 40) BLANK2**	Sampling Date	10-Dec-21
ALS Sample ID	L2671585-4	Extraction Date	21-Dec-22
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Peter Nguyen
--e-signature--
26-Jan-2022

Run Information	**Run 1**
Filename	CB22012526.D
Run Date	1/25/2022 20:55
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene		NQ	
1,3-Dichlorobenzene	NotFnd	<12	U
1,4-Dichlorobenzene	6.85	63.7	
1,2-Dichlorobenzene	NotFnd	<12	U
1,3,5-Trichlorobenzene	NotFnd	<12	U
1,2,4-Trichlorobenzene	NotFnd	<12	U
1,2,3-Trichlorobenzene	NotFnd	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	NotFnd	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	NotFnd	<12	U
Hexachlorobenzene	NotFnd	<12	U

Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	600	10.29	103	M

Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.58	NQ	
13C6-1,4-Dichlorobenzene	300	6.85	10	M
13C6-1,2,3-Trichlorobenzene	300	9.27	58	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.99	62	
13C6-Pentachlorobenzene	300	12.33	74	
13C6-Hexachlorobenzene	300	13.97	87	

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
NQ	Indicates that this compound cannot be quantified due to losses of the associated extraction standard.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3673320-2	Extraction Date	21-Dec-22
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Peter Nguyen
--e-signature--
26-Jan-2022

Run Information	**Run 1**
Filename	CB22012523.D
Run Date	1/25/2022 19:53
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**
Chlorobenzene			NS	
1,3-Dichlorobenzene	300	6.77	76	M
1,4-Dichlorobenzene	300	6.86	81	M
1,2-Dichlorobenzene	300	7.16	109	
1,3,5-Trichlorobenzene	300	8.35	85	
1,2,4-Trichlorobenzene	300	8.87	146	
1,2,3-Trichlorobenzene	300	9.28	92	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	600	10.50	88	
1,2,3,4-Tetrachlorobenzene	300	11.00	88	
Pentachlorobenzene	300	12.34	90	
Hexachlorobenzene	300	13.97	87	
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene			NS	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.57	1	M
13C6-1,4-Dichlorobenzene	300	6.86	30	
13C6-1,2,3-Trichlorobenzene	300	9.28	77	
13C6-1,2,3,4-Tetrachlorobenzene	600	10.99	74	
13C6-Pentachlorobenzene	600	12.34	77	
13C6-Hexachlorobenzene	600	13.97	78	

M	Indicates that a peak has been manually integrated.
NS	Indicates that this compound was not spiked in

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3673320-5	Extraction Date	21-Dec-22
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Peter Nguyen
--e-signature--
26-Jan-2022

Run Information	**Run 1**
Filename	CB22012522.D
Run Date	1/25/2022 19:32
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**
Chlorobenzene			NS	
1,3-Dichlorobenzene	30	6.77	83	
1,4-Dichlorobenzene	30	6.85	98	M R
1,2-Dichlorobenzene	30	7.16	82	
1,3,5-Trichlorobenzene	30	8.35	95	
1,2,4-Trichlorobenzene	30	8.87	142	M
1,2,3-Trichlorobenzene	30	9.28	96	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	60	10.50	75	M
1,2,3,4-Tetrachlorobenzene	30	11.00	70	M
Pentachlorobenzene	30	12.34	87	
Hexachlorobenzene	30	13.97	102	
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene			NS	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	300	4.58	1	M
13C6-1,4-Dichlorobenzene	300	6.85	21	
13C6-1,2,3-Trichlorobenzene	300	9.28	56	
13C6-1,2,3,4-Tetrachlorobenzene	600	10.99	60	
13C6-Pentachlorobenzene	600	12.34	60	
13C6-Hexachlorobenzene	600	13.97	66	

M	Indicates that a peak has been manually integrated.
NS	Indicates that this compound was not spiked in.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	Ortech Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Rd.
ALS WO#:	L2669132 Revision 1		Mississauga, ON L5J 2Y4
Date of Report Revision	18-Jan-22		Canada
Date of Sample Receipt	3-Dec-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS: **Chlorophenols as acetate derivatives by SIM GC/MS**
REVISED REPORT: Revised reporting limits

Certified by:

Ron McLeod, PhD
Technical Director

Results in this certificate relate only to the samples as submitted to the laboratory.
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ALS Environmental

Sample Analysis Summary Report

Sample Name	Media Blank		21-22085-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1		21-22085-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1		21-22085-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1		21-22085-SVOC-(16 THRU 20) BLANK1	
ALS Sample ID	WG3669684-1		L2669132-1		L2669132-2		L2669132-3		L2669132-4	
Sample Size	1		1		1		1		1	
Sample units	sample		sample		sample		sample		sample	
Moisture Content	n/a		n/a		n/a		n/a		n/a	
Matrix	QC		Stack		Stack		Stack		Stack	
Sampling Date	n/a		1-Dec-21		1-Dec-21		2-Dec-21		2-Dec-21	
Extraction Date	14-Dec-21		14-Dec-21		14-Dec-21		14-Dec-21		14-Dec-21	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**	
2-Chlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U
3-Chlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U
4-Chlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U
2,6-Dichlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U
2,4/2,5-Dichlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U
3,5-Dichlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U
2,3-Dichlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U
3,4-Dichlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U
2,4,6-Trichlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U
2,3,6-Trichlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U
2,3,5-Trichlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U
2,4,5-Trichlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U
2,3,4-Trichlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U
3,4,5-Trichlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U
2,3,4,5-Tetrachlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U
Pentachlorophenol	<120	U	<120	U	<120	U	<120	U	<120	U
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
13C6-4-Chlorophenol (ES)	12		56		54		35	M	42	M
13C6-2,4-Dichlorophenol (ES)	5		56		59		19		31	
13C6-2,4,5-Trichlorophenol (ES)	14		29		47		24		33	
13C6-2,3,4,5-Tetrachlorophenol (ES)	7		12		53		11		26	
13C6-Pentachlorophenol (ES)	9	M	11	M	44		5	M	10	M

U Indicates that this compound was not detected above the LOR.

M Indicates that a peak has been manually integrated.

ALS Environmental

Sample Analysis Summary Report

Sample Name	Laboratory Control Sample (1200ng)	Laboratory Control Sample (120 ng)
ALS Sample ID	WG3669684-2	WG3669684-4
Sample Size	1	1
Sample units	n/a	n/a
Moisture Content	n/a	n/a
Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	14-Dec-21	14-Dec-21
Target Analytes	**% Recovery**	**% Recovery**
2-Chlorophenol	130	130
3-Chlorophenol		
4-Chlorophenol		
2,6-Dichlorophenol	111	81
2,4/2,5-Dichlorophenol	120	94
3,5-Dichlorophenol		
2,3-Dichlorophenol		
3,4-Dichlorophenol		
2,4,6-Trichlorophenol	118	51
2,3,6-Trichlorophenol		
2,3,5-Trichlorophenol		
2,4,5-Trichlorophenol	117	91
2,3,4-Trichlorophenol		
3,4,5-Trichlorophenol		
2,3,5,6/2,3,4,6-Tetrachlorophenol	99	123
2,3,4,5-Tetrachlorophenol	107	105
Pentachlorophenol	117	109
Extraction Standards	**% Rec**	**% Rec**
13C6-4-Chlorophenol (ES)	62	29
13C6-2,4-Dichlorophenol (ES)	74	22
13C6-2,4,5-Trichlorophenol (ES)	63	37
13C6-2,3,4,5-Tetrachlorophenol (ES)	85	56
13C6-Pentachlorophenol (ES)	64	30

M	Indicates that a peak has been manually integrated.

ALS Environmental

Sample Analysis Report

Sample Name	**Media Blank**	Sampling Date	n/a
ALS Sample ID	WG3669684-1	Extraction Date	14-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	blank		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
21-Dec-2021

Run Information	**Run 1**
Filename	21122006.D
Run Date	12/20/2021 21:30
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<120	U
3-Chlorophenol	NotFnd	<120	U
4-Chlorophenol	NotFnd	<120	U
2,6-Dichlorophenol	NotFnd	<120	U
2,4/2,5-Dichlorophenol	NotFnd	<120	U
3,5-Dichlorophenol	NotFnd	<120	U
2,3-Dichlorophenol	NotFnd	<120	U
3,4-Dichlorophenol	NotFnd	<120	U
2,4,6-Trichlorophenol	NotFnd	<120	U
2,3,6-Trichlorophenol	NotFnd	<120	U
2,3,5-Trichlorophenol	NotFnd	<120	U
2,4,5-Trichlorophenol	NotFnd	<120	U
2,3,4-Trichlorophenol	NotFnd	<120	U
3,4,5-Trichlorophenol	NotFnd	<120	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<120	U
2,3,4,5-Tetrachlorophenol	NotFnd	<120	U
Pentachlorophenol	NotFnd	<120	U

Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.66	12		20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.83	5		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.31	14		20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.91	7		20-150
13C6-Pentachlorophenol (ES)	1200	13.88	9	M	20-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**21-22085-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1**	Sampling Date	1-Dec-21
ALS Sample ID	L2669132-1	Extraction Date	14-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
21-Dec-2021

Run Information	**Run 1**
Filename	21122009.D
Run Date	12/20/2021 22:43
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<120	U
3-Chlorophenol	NotFnd	<120	U
4-Chlorophenol	NotFnd	<120	U
2,6-Dichlorophenol	NotFnd	<120	U
2,4/2,5-Dichlorophenol	NotFnd	<120	U
3,5-Dichlorophenol	NotFnd	<120	U
2,3-Dichlorophenol	NotFnd	<120	U
3,4-Dichlorophenol	NotFnd	<120	U
2,4,6-Trichlorophenol	NotFnd	<120	U
2,3,6-Trichlorophenol	NotFnd	<120	U
2,3,5-Trichlorophenol	NotFnd	<120	U
2,4,5-Trichlorophenol	NotFnd	<120	U
2,3,4-Trichlorophenol	NotFnd	<120	U
3,4,5-Trichlorophenol	NotFnd	<120	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<120	U
2,3,4,5-Tetrachlorophenol	NotFnd	<120	U
Pentachlorophenol	NotFnd	<120	U

Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.71	56		20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.85	56		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.30	29		20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.91	12		20-150
13C6-Pentachlorophenol (ES)	1200	13.88	11	M	20-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**21-22085-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1**	Sampling Date	1-Dec-21
ALS Sample ID	L2669132-2	Extraction Date	14-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
21-Dec-2021

Run Information	**Run 1**
Filename	21122010.D
Run Date	12/20/2021 23:07
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<120	U
3-Chlorophenol	NotFnd	<120	U
4-Chlorophenol	NotFnd	<120	U
2,6-Dichlorophenol	NotFnd	<120	U
2,4/2,5-Dichlorophenol	NotFnd	<120	U
3,5-Dichlorophenol	NotFnd	<120	U
2,3-Dichlorophenol	NotFnd	<120	U
3,4-Dichlorophenol	NotFnd	<120	U
2,4,6-Trichlorophenol	NotFnd	<120	U
2,3,6-Trichlorophenol	NotFnd	<120	U
2,3,5-Trichlorophenol	NotFnd	<120	U
2,4,5-Trichlorophenol	NotFnd	<120	U
2,3,4-Trichlorophenol	NotFnd	<120	U
3,4,5-Trichlorophenol	NotFnd	<120	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<120	U
2,3,4,5-Tetrachlorophenol	NotFnd	<120	U
Pentachlorophenol	NotFnd	<120	U

Extraction Standards			**% Rec**	
13C6-4-Chlorophenol (ES)	1200	8.69	54	20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.83	59	20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.29	47	20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.90	53	20-150
13C6-Pentachlorophenol (ES)	1200	13.88	44	20-150

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**21-22085-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1**	Sampling Date	2-Dec-21
ALS Sample ID	L2669132-3	Extraction Date	14-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
21-Dec-2021

Run Information	**Run 1**
Filename	21122011.D
Run Date	12/20/2021 23:30
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<120	U
3-Chlorophenol	NotFnd	<120	U
4-Chlorophenol	NotFnd	<120	U
2,6-Dichlorophenol	NotFnd	<120	U
2,4/2,5-Dichlorophenol	NotFnd	<120	U
3,5-Dichlorophenol	NotFnd	<120	U
2,3-Dichlorophenol	NotFnd	<120	U
3,4-Dichlorophenol	NotFnd	<120	U
2,4,6-Trichlorophenol	NotFnd	<120	U
2,3,6-Trichlorophenol	NotFnd	<120	U
2,3,5-Trichlorophenol	NotFnd	<120	U
2,4,5-Trichlorophenol	NotFnd	<120	U
2,3,4-Trichlorophenol	NotFnd	<120	U
3,4,5-Trichlorophenol	NotFnd	<120	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<120	U
2,3,4,5-Tetrachlorophenol	NotFnd	<120	U
Pentachlorophenol	NotFnd	<120	U

Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.72	35	M	20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.85	19		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.30	24		20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.90	11		20-150
13C6-Pentachlorophenol (ES)	1200	13.88	5	M	20-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**21-22085-SVOC-(16 THRU 20) BLANK1**	Sampling Date	2-Dec-21
ALS Sample ID	L2669132-4	Extraction Date	14-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
21-Dec-2021

Run Information	**Run 1**
Filename	21122008.D
Run Date	12/20/2021 22:19
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<120	U
3-Chlorophenol	NotFnd	<120	U
4-Chlorophenol	NotFnd	<120	U
2,6-Dichlorophenol	NotFnd	<120	U
2,4/2,5-Dichlorophenol	NotFnd	<120	U
3,5-Dichlorophenol	NotFnd	<120	U
2,3-Dichlorophenol	NotFnd	<120	U
3,4-Dichlorophenol	NotFnd	<120	U
2,4,6-Trichlorophenol	NotFnd	<120	U
2,3,6-Trichlorophenol	NotFnd	<120	U
2,3,5-Trichlorophenol	NotFnd	<120	U
2,4,5-Trichlorophenol	NotFnd	<120	U
2,3,4-Trichlorophenol	NotFnd	<120	U
3,4,5-Trichlorophenol	NotFnd	<120	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<120	U
2,3,4,5-Tetrachlorophenol	NotFnd	<120	U
Pentachlorophenol	NotFnd	<120	U

Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.68	42	M	20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.83	31		20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.29	33		20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.90	26		20-150
13C6-Pentachlorophenol (ES)	1200	13.88	10	M	20-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the LOR.

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample (1200ng)**	Sampling Date	n/a
ALS Sample ID	WG3669684-2	Extraction Date	14-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
21-Dec-2021

Run Information	**Run 1**
Filename	21122004.D
Run Date	12/20/2021 20:43
Final Volume	1 mL
Dilution Factor	1
Analysis Units	n/a
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**	
2-Chlorophenol	1200	8.01	130		27-124
3-Chlorophenol					
4-Chlorophenol					
2,6-Dichlorophenol	1200	9.32	111		10-110
2,4/2,5-Dichlorophenol	1200	9.52	120		35-98
3,5-Dichlorophenol					
2,3-Dichlorophenol					
3,4-Dichlorophenol					
2,4,6-Trichlorophenol	1200	10.44	118		10-102
2,3,6-Trichlorophenol					
2,3,5-Trichlorophenol					
2,4,5-Trichlorophenol	1200	10.98	117		45-95
2,3,4-Trichlorophenol					
3,4,5-Trichlorophenol					
2,3,5,6/2,3,4,6-Tetrachlorophenol	2400	12.09	99	M	30-109
2,3,4,5-Tetrachlorophenol	1200	12.59	107		44-103
Pentachlorophenol	1200	13.56	117		32-121
Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.35	62		50-150
13C6-2,4-Dichlorophenol (ES)	1200	9.52	74		50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.98	63		50-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.59	85		50-150
13C6-Pentachlorophenol (ES)	1200	13.56	64		50-150

M Indicates that a peak has been manually integrated.

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample (120 ng)**	Sampling Date	n/a
ALS Sample ID	WG3669684-4	Extraction Date	14-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
21-Dec-2021

Run Information	**Run 1**
Filename	21122007.D
Run Date	12/20/2021 21:55
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**	
2-Chlorophenol	120	8.01	130		28-124
3-Chlorophenol					
4-Chlorophenol					
2,6-Dichlorophenol	120	9.32	81		10-110
2,4/2,5-Dichlorophenol	120	9.52	94		35-98
3,5-Dichlorophenol					
2,3-Dichlorophenol					
3,4-Dichlorophenol					
2,4,6-Trichlorophenol	120	10.44	51		10-102
2,3,6-Trichlorophenol					
2,3,5-Trichlorophenol					
2,4,5-Trichlorophenol	120	10.98	91		45-95
2,3,4-Trichlorophenol					
3,4,5-Trichlorophenol					
2,3,5,6/2,3,4,6-Tetrachlorophenol	120	12.06	123		30-109
2,3,4,5-Tetrachlorophenol	120	12.59	105		44-103
Pentachlorophenol	120	13.57	109		32-121
Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.35	29		50-150
13C6-2,4-Dichlorophenol (ES)	1200	9.52	22		50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.99	37		50-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.59	56		50-150
13C6-Pentachlorophenol (ES)	1200	13.56	30		50-150

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	Ortech
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Rd.
ALS WO#:	L2671585		Mississauga, ON L5J 2Y4
Date of Report	28-Jan-22		Canada
Date of Sample Receipt	10-Dec-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS: **Chlorophenols as acetate derivatives by SIM GC/MS**

Certified by:

Ron McLeod, PhD
Laboratory Manager and Technical Director

Results in this certificate relate only to the samples as submitted to the laboratory.
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ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank	21-22085-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2	21-22085-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2	21-22085-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2	21-22085-SVOC-(36 THRU 40) BLANK2	Laboratory Control Sample (1200ng)
ALS Sample ID	WG3673320-1	L2671585-1	L2671585-2	L2671585-3	L2671585-4	WG3673320-2
Sample Size	1	1	1	1	1	1
Sample units	sample	sample	sample	sample	sample	n/a
Moisture Content	n/a	n/a	n/a	n/a	n/a	n/a
Matrix	QC	Stack	Stack	Stack	Stack	QC
Sampling Date	n/a	9-Dec-21	9-Dec-21	10-Dec-21	10-Dec-21	n/a
Extraction Date	21-Dec-21	21-Dec-21	21-Dec-21	21-Dec-21	21-Dec-21	21-Dec-21
Target Analytes	**ng/sample**	**ng/sample**	**ng/sample**	**ng/sample**	**ng/sample**	**% Recovery**
2-Chlorophenol	<60 U	<60 U	<60 U	<60 U	<60 U	104
3-Chlorophenol	<60 U	<60 U	<60 U	<60 U	<60 U	
4-Chlorophenol	<60 U	<60 U	<60 U	<60 U	<60 U	
2,6-Dichlorophenol	<60 U	<60 U	<60 U	<60 U	<60 U	96
2,4/2,5-Dichlorophenol	<60 U	<60 U	<60 U	<60 U	<60 U	103
3,5-Dichlorophenol	<60 U	<60 U	<60 U	<60 U	<60 U	
2,3-Dichlorophenol	<60 U	<60 U	<60 U	<60 U	<60 U	
3,4-Dichlorophenol	<60 U	<60 U	<60 U	<60 U	<60 U	
2,4,6-Trichlorophenol	<60 U	<60 U	<60 U	<60 U	<60 U	106
2,3,6-Trichlorophenol	<60 U	<60 U	<60 U	<60 U	<60 U	
2,3,5-Trichlorophenol	<60 U	<60 U	<60 U	<60 U	<60 U	
2,4,5-Trichlorophenol	<60 U	<60 U	<60 U	<60 U	<60 U	99
2,3,4-Trichlorophenol	<60 U	<60 U	<60 U	<60 U	<60 U	
3,4,5-Trichlorophenol	<60 U	<60 U	<60 U	<60 U	<60 U	
2,3,5,6/2,3,4,6-Tetrachlorophenol	<60 U	<60 U	<60 U	<60 U	<60 U	109
2,3,4,5-Tetrachlorophenol	<60 U	<60 U	<60 U	<60 U	<60 U	104
Pentachlorophenol	<60 U	<60 U	<60 U	<60 U	<60 U	94
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
13C6-4-Chlorophenol (ES)	37	54	49	47	39	43
13C6-2,4-Dichlorophenol (ES)	48	47	43	52	24	31
13C6-2,4,5-Trichlorophenol (ES)	56	56	30	39	28	61
13C6-2,3,4,5-Tetrachlorophenol (ES)	34	65	40	51	42	50
13C6-Pentachlorophenol (ES)	28	42	36	25	17	52

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Summary Report

Sample Name	Laboratory Control Sample (120 ng)
ALS Sample ID	WG3673320-5
Sample Size	1
Sample units	n/a
Moisture Content	n/a
Matrix	QC
Sampling Date	n/a
Extraction Date	21-Dec-21
Target Analytes	**% Recovery**
2-Chlorophenol	109
3-Chlorophenol	
4-Chlorophenol	
2,6-Dichlorophenol	89
2,4/2,5-Dichlorophenol	98
3,5-Dichlorophenol	
2,3-Dichlorophenol	
3,4-Dichlorophenol	
2,4,6-Trichlorophenol	75
2,3,6-Trichlorophenol	
2,3,5-Trichlorophenol	
2,4,5-Trichlorophenol	114
2,3,4-Trichlorophenol	
3,4,5-Trichlorophenol	
2,3,5,6/2,3,4,6-Tetrachlorophenol	92
2,3,4,5-Tetrachlorophenol	98
Pentachlorophenol	104
Extraction Standards	**% Rec**
13C6-4-Chlorophenol (ES)	31
13C6-2,4-Dichlorophenol (ES)	26
13C6-2,4,5-Trichlorophenol (ES)	34
13C6-2,3,4,5-Tetrachlorophenol (ES)	42
13C6-Pentachlorophenol (ES)	44

ALS Environmental

Sample Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG3673320-1	Extraction Date	21-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
28-Jan-2022

Run Information	**Run 1**
Filename	22012706.D
Run Date	1/27/2022 10:35
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<60	U
3-Chlorophenol	NotFnd	<60	U
4-Chlorophenol	NotFnd	<60	U
2,6-Dichlorophenol	NotFnd	<60	U
2,4/2,5-Dichlorophenol	NotFnd	<60	U
3,5-Dichlorophenol	NotFnd	<60	U
2,3-Dichlorophenol	NotFnd	<60	U
3,4-Dichlorophenol	NotFnd	<60	U
2,4,6-Trichlorophenol	NotFnd	<60	U
2,3,6-Trichlorophenol	NotFnd	<60	U
2,3,5-Trichlorophenol	NotFnd	<60	U
2,4,5-Trichlorophenol	NotFnd	<60	U
2,3,4-Trichlorophenol	NotFnd	<60	U
3,4,5-Trichlorophenol	NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60	U
2,3,4,5-Tetrachlorophenol	NotFnd	<60	U
Pentachlorophenol	NotFnd	<60	U

Extraction Standards			**% Rec**	
13C6-4-Chlorophenol (ES)	1200	8.66	37	20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.83	48	20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.31	56	20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.91	34	20-150
13C6-Pentachlorophenol (ES)	1200	13.88	28	20-150

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**21-22085-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2**	Sampling Date	9-Dec-21
ALS Sample ID	L2671585-1	Extraction Date	21-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
28-Jan-2022

Run Information	**Run 1**
Filename	22012708.D
Run Date	1/27/2022 11:36
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<60	U
3-Chlorophenol	NotFnd	<60	U
4-Chlorophenol	NotFnd	<60	U
2,6-Dichlorophenol	NotFnd	<60	U
2,4/2,5-Dichlorophenol	NotFnd	<60	U
3,5-Dichlorophenol	NotFnd	<60	U
2,3-Dichlorophenol	NotFnd	<60	U
3,4-Dichlorophenol	NotFnd	<60	U
2,4,6-Trichlorophenol	NotFnd	<60	U
2,3,6-Trichlorophenol	NotFnd	<60	U
2,3,5-Trichlorophenol	NotFnd	<60	U
2,4,5-Trichlorophenol	NotFnd	<60	U
2,3,4-Trichlorophenol	NotFnd	<60	U
3,4,5-Trichlorophenol	NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60	U
2,3,4,5-Tetrachlorophenol	NotFnd	<60	U
Pentachlorophenol	NotFnd	<60	U

Extraction Standards			**% Rec**	
13C6-4-Chlorophenol (ES)	1200	8.35	54	20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.52	47	20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.99	56	20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.59	65	20-150
13C6-Pentachlorophenol (ES)	1200	13.56	42	20-150

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**21-22085-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2**	Sampling Date	9-Dec-21
ALS Sample ID	L2671585-2	Extraction Date	21-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
28-Jan-2022

Run Information	**Run 1**
Filename	22012709.D
Run Date	1/27/2021 12:02
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<60	U
3-Chlorophenol	NotFnd	<60	U
4-Chlorophenol	NotFnd	<60	U
2,6-Dichlorophenol	NotFnd	<60	U
2,4/2,5-Dichlorophenol	NotFnd	<60	U
3,5-Dichlorophenol	NotFnd	<60	U
2,3-Dichlorophenol	NotFnd	<60	U
3,4-Dichlorophenol	NotFnd	<60	U
2,4,6-Trichlorophenol	NotFnd	<60	U
2,3,6-Trichlorophenol	NotFnd	<60	U
2,3,5-Trichlorophenol	NotFnd	<60	U
2,4,5-Trichlorophenol	NotFnd	<60	U
2,3,4-Trichlorophenol	NotFnd	<60	U
3,4,5-Trichlorophenol	NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60	U
2,3,4,5-Tetrachlorophenol	NotFnd	<60	U
Pentachlorophenol	NotFnd	<60	U

Extraction Standards			**% Rec**	
13C6-4-Chlorophenol (ES)	1200	8.71	49	20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.85	43	20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.30	30	20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.91	40	20-150
13C6-Pentachlorophenol (ES)	1200	13.88	36	20-150

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**21-22085-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2**	Sampling Date	10-Dec-21
ALS Sample ID	L2671585-3	Extraction Date	21-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
28-Jan-2022

Run Information	**Run 1**
Filename	22012710.D
Run Date	1/27/2021 12:28
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<60	U
3-Chlorophenol	NotFnd	<60	U
4-Chlorophenol	NotFnd	<60	U
2,6-Dichlorophenol	NotFnd	<60	U
2,4/2,5-Dichlorophenol	NotFnd	<60	U
3,5-Dichlorophenol	NotFnd	<60	U
2,3-Dichlorophenol	NotFnd	<60	U
3,4-Dichlorophenol	NotFnd	<60	U
2,4,6-Trichlorophenol	NotFnd	<60	U
2,3,6-Trichlorophenol	NotFnd	<60	U
2,3,5-Trichlorophenol	NotFnd	<60	U
2,4,5-Trichlorophenol	NotFnd	<60	U
2,3,4-Trichlorophenol	NotFnd	<60	U
3,4,5-Trichlorophenol	NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60	U
2,3,4,5-Tetrachlorophenol	NotFnd	<60	U
Pentachlorophenol	NotFnd	<60	U

Extraction Standards			**% Rec**	
13C6-4-Chlorophenol (ES)	1200	8.69	47	20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.83	52	20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.29	39	20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.90	51	20-150
13C6-Pentachlorophenol (ES)	1200	13.88	25	20-150

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Sample Analysis Report

Sample Name	**21-22085-SVOC-(36 THRU 40) BLANK2**	Sampling Date	10-Dec-21
ALS Sample ID	L2671585-4	Extraction Date	21-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
28-Jan-2022

Run Information	**Run 1**
Filename	22012706.D
Run Date	1/27/2022 10:57
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<60	U
3-Chlorophenol	NotFnd	<60	U
4-Chlorophenol	NotFnd	<60	U
2,6-Dichlorophenol	NotFnd	<60	U
2,4/2,5-Dichlorophenol	NotFnd	<60	U
3,5-Dichlorophenol	NotFnd	<60	U
2,3-Dichlorophenol	NotFnd	<60	U
3,4-Dichlorophenol	NotFnd	<60	U
2,4,6-Trichlorophenol	NotFnd	<60	U
2,3,6-Trichlorophenol	NotFnd	<60	U
2,3,5-Trichlorophenol	NotFnd	<60	U
2,4,5-Trichlorophenol	NotFnd	<60	U
2,3,4-Trichlorophenol	NotFnd	<60	U
3,4,5-Trichlorophenol	NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60	U
2,3,4,5-Tetrachlorophenol	NotFnd	<60	U
Pentachlorophenol	NotFnd	<60	U

Extraction Standards			**% Rec**	
13C6-4-Chlorophenol (ES)	1200	8.72	39	20-150
13C6-2,4-Dichlorophenol (ES)	1200	9.85	24	20-150
13C6-2,4,5-Trichlorophenol (ES)	1200	11.30	28	20-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.90	42	20-150
13C6-Pentachlorophenol (ES)	1200	13.88	17	20-150

U Indicates that this compound was not detected above the LOR.

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3673320-2	Extraction Date	21-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
28-Jan-2022

Run Information	**Run 1**
Filename	22012706.D
Run Date	1/27/2022 9:35
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**ng spiked**	**Ret. Time**	**% Recovery**	**Flags**
2-Chlorophenol	1200	8.01	104	26-124
3-Chlorophenol				
4-Chlorophenol				
2,6-Dichlorophenol	1200	9.32	96	10-110
2,4/2,5-Dichlorophenol	1200	9.52	103	35-98
3,5-Dichlorophenol				
2,3-Dichlorophenol				
3,4-Dichlorophenol				
2,4,6-Trichlorophenol	1200	10.44	106	10-102
2,3,6-Trichlorophenol				
2,3,5-Trichlorophenol				
2,4,5-Trichlorophenol	1200	10.98	99	45-95
2,3,4-Trichlorophenol				
3,4,5-Trichlorophenol				
2,3,5,6/2,3,4,6-Tetrachlorophenol	2400	12.09	109	30-109
2,3,4,5-Tetrachlorophenol	1200	12.59	104	44-103
Pentachlorophenol	1200	13.56	94	32-121
Extraction Standards			**% Rec**	
13C6-4-Chlorophenol (ES)	1200	8.35	43	50-150
13C6-2,4-Dichlorophenol (ES)	1200	9.52	31	50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.98	61	50-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.59	50	50-150
13C6-Pentachlorophenol (ES)	1200	13.56	52	50-150

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3673320-5	Extraction Date	21-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Andrew Reid
--e-signature--
28-Jan-2022

Run Information	**Run 1**
Filename	22012705.D
Run Date	1/27/2022 9:02
Final Volume	1 mL
Dilution Factor	1
Analysis Units	n/a
Instrument	MSD-2
Column	HP-5MS USN267447H

Target Analytes	**ng spiked**	**Ret. Time**	**% Recovery**	**Flags**	
2-Chlorophenol	120	8.01	109		27-124
3-Chlorophenol					
4-Chlorophenol					
2,6-Dichlorophenol	120	9.32	89		10-110
2,4/2,5-Dichlorophenol	120	9.52	98		35-98
3,5-Dichlorophenol					
2,3-Dichlorophenol					
3,4-Dichlorophenol					
2,4,6-Trichlorophenol	120	10.44	75		10-102
2,3,6-Trichlorophenol					
2,3,5-Trichlorophenol					
2,4,5-Trichlorophenol	120	10.98	114		45-95
2,3,4-Trichlorophenol					
3,4,5-Trichlorophenol					
2,3,5,6/2,3,4,6-Tetrachlorophenol	240	12.06	92		30-109
2,3,4,5-Tetrachlorophenol	120	12.59	98		44-103
Pentachlorophenol	120	13.57	104		32-121
Extraction Standards			**% Rec**		
13C6-4-Chlorophenol (ES)	1200	8.35	31		50-150
13C6-2,4-Dichlorophenol (ES)	1200	9.52	26		50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.99	34		50-150
13C6-2,3,4,5-Tetrachlorophenol (E	1200	12.59	42		50-150
13C6-Pentachlorophenol (ES)	1200	13.56	44		50-150

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	Ortech Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Rd.
ALS WO#:	L2669132		Mississauga, ON L5J 2Y4
Date of Report	21-Dec-21		Canada
Date of Sample Receipt	3-Dec-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS: **PAH by CARB method 429 (LR option)- Isotope dilution**

Selected samples show a high bias to fluorene-d10 field spike recoveries due to an incompletely resolved interference peak.

Certified by:

Ron McLeod, Ph.D.
Technical Director

Results in this certificate relate only to the samples as submitted to the laboratory.
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ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		21-22085-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1		21-22085-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1		21-22085-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1		21-22085-SVOC-(16 THRU 20) BLANK1	
ALS Sample ID	WG3669684-1		L2669132-1		L2669132-2		L2669132-3		L2669132-4	
Sample Size	1		1		1		1		1	
Sample units	sample		sample		sample		sample		sample	
Moisture Content	n/a		n/a		n/a		n/a		n/a	
Matrix	QC		Stack		Stack		Stack		Stack	
Sampling Date	n/a		1-Dec-21		1-Dec-21		2-Dec-21		2-Dec-21	
Extraction Date	14-Dec-21		14-Dec-21		14-Dec-21		14-Dec-21		14-Dec-21	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**	
Naphthalene	42.5	M,R	603	M	210	M,B	2460		110	M,B
2-Methylnaphthalene	<12	U	222	M	68.2	M	475		<12	U
1-Methylnaphthalene	<12	U	93.5		36.7		257		<12	U
Acenaphthylene	<12	U	48.5	M	<12	U	179		<12	U
Acenaphthene	<12	U	<12	U	38.8	M	<12	U	<12	U
Fluorene	<12	U	59.0		246	R	20.7		<12	U
Phenanthrene	<12	U	692		238		113		<12	U
Anthracene	<12	U	77.5		<12	U	15.0		<12	U
Fluoranthene	<12	U	436		68.5		31.9		<12	U
Pyrene	<12	U	454		138	M	40.4	M	<12	U
Benzo(a)Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U
Chrysene/Triphenylene	<12	U	26.5		<12	U	<12	U	<12	U
Benzo(b)Fluoranthene	<12	U	22.0	M,R	14.5	R	16.1	R	<12	U
Benzo(k)Fluoranthene	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(e)Pyrene	<12	U	12.3	M	20.8		16.0	M	<12	U
Benzo(a)Pyrene	<12	U	<12	U	<12	U	<12	U	<12	U
Perylene	<12	U	<12	U	<12	U	<12	U	<12	U
Indeno(1,2,3-cd)Pyrene	<12	U	<12	U	<12	U	<12	U	<12	U
Dibenzo(a,c/a,h)Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(g,h,i)Perylene	<12	U	39.2	M	40.7	M	46.1		<12	U
Additional Analytes										
Tetralin	<12	U	269	M,R	74.0	M	93.0	M,R	92.0	M,R
2-Chloronaphthalene	<12	U	<12	U	<12	U	<12	U	<12	U
Biphenyl	<12	U	121		95.3		121	M	16.4	M
o-Terphenyl	<12	U	<12	U	12.4	M	<12	U	<12	U
1-Methylphenanthrene	<12	U	83.3	R	75.6	R	47.9	R	23.3	M,R
9-Methylphenanthrene	<12	U	29.3	M	40.4		18.2	R	<12	U
2-methylanthracene	<12	U	55.5	R	58.2	R	32.3	R	<12	U
9,10-dimethylanthracene	<12	U	<12	U	213	R	19.8	M,R	<12	U
m-terphenyl	<12	U	16.8	M	<12	U	<12	U	<12	U
p-terphenyl	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(a)fluorene	<12	U	16.1		<12	U	<12	U	<12	U
Benzo(b)fluorene	<12	U	14.8	M,R	<12	U	<12	U	<12	U
7,12-Dimethylbenzo(a)anthracene	<12	U	<12	U	<12	U	<12	U	<12	U
3-Methylcholanthrene	<60	U	<60	U	136	M,R	<60	U	<60	U
Picene	<60	U	<60	U	<60	U	<60	U	<60	U
Dibenzo(a,e)pyrene	<60	U	<60	U	<60	U	<60	U	<60	U
Coronene	<60	U	<60	U	<60	U	<60	U	<60	U
Field Sampling Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
1-Methylnaphthalene-D10	NS		79.4		77.1		77.5		81.0	
Fluorene D10	NS		139.0		171.5		127.0		102.0	
Terphenyl D14(Surr.)	NS		124.5		115.5	M	120.4	M	122.6	M
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
Naphthalene D8	87.5		80.8		85.6		108.2	R	89.1	
2-Methylnaphthalene-D10	112.3		104.8		107.5		122.1		116.5	
Acenaphthylene D8	76.2		72.1		69.7		65.2		71.4	
Phenanthrene D10	113.5		100.9	M	107.8	M	117.0	M	116.6	
Anthracene-D10	70.1		65.8		74.4		58.1		68.6	M
Fluoranthene D10	105.2		105.6		106.9		118.3	M	119.2	
Benz(a)Anthracene-D12	83.7		92.0		76.0		79.4	M	99.5	
Chrysene D12	94.3	M	90.0	M	81.1	M	91.1	M	103.1	M
Benzo(b)Fluoranthene-D12	104.3		108.5		109.5	M	124.4		116.1	M
Benzo(k)Fluoranthene-D12	73.2	M	82.1	M	84.7	M	93.2	M	87.2	M
Benzo(a)Pyrene D12	79.9	M	80.2	M	80.9	M	68.4	M	79.3	M
Perylene D12	80.1	M	72.5		80.6	M	73.5	M	79.4	M
Indeno(1,2,3,cd)Pyrene-D12	106.8		96.6		90.9		97.2		108.0	
Dibenz(a,h)Anthracene-D14	104.1		100.4		94.5		98.1		111.8	
Benzo(g,h,i)Perylene D12	104.4		101.1		96.1		101.3		112.3	

U	Indicates that this compound was not detected above the LOD.
M	Indicates that a peak has been manually integrated.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
NS	Indicates that the compound was not added to the sample

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Laboratory Control Sample	
ALS Sample ID	WG3669684-2	
Sample Size	1	
Sample units	n/a	
Moisture Content	n/a	
Matrix	QC	
Sampling Date	n/a	
Extraction Date	14-Dec-21	
Target Analytes	**%**	
Naphthalene	120.1	M
2-Methylnaphthalene	100.6	
1-Methylnaphthalene	101.5	
Acenaphthylene	109.1	
Acenaphthene	115.3	
Fluorene	107.5	
Phenanthrene	109.9	
Anthracene	120.7	M
Fluoranthene	101.1	
Pyrene	96.3	
Benzo(a)Anthracene	105.0	
Chrysene/Triphenylene	110.6	
Benzo(b)Fluoranthene	91.0	M
Benzo(k)Fluoranthene	115.8	
Benzo(e)Pyrene	118.0	M
Benzo(a)Pyrene	101.0	M
Perylene	99.3	
Indeno(1,2,3-cd)Pyrene	84.8	
Dibenzo(a,c/a,h)Anthracene	98.7	
Benzo(g,h,i)Perylene	87.4	
Field Sampling Standards	**% Rec**	
1-Methylnaphthalene-D10	NS	
Fluorene D10	NS	
Terphenyl D14(Surr.)	NS	
Extraction Standards	**% Rec**	
Naphthalene D8	104.5	
2-Methylnaphthalene-D10	128.5	
Acenaphthylene D8	87.8	
Phenanthrene D10	136.8	M
Anthracene-D10	89.3	
Fluoranthene D10	116.5	M
Benz(a)Anthracene-D12	90.4	
Chrysene D12	102.9	M
Benzo(b)Fluoranthene-D12	114.7	
Benzo(k)Fluoranthene-D12	90.5	M
Benzo(a)Pyrene D12	91.2	M
Perylene D12	84.6	
Indeno(1,2,3,cd)Pyrene-D12	110.2	
Dibenz(a,h)Anthracene-D14	111.4	
Benzo(g,h,i)Perylene D12	112.6	

M	Indicates that a peak has been manually integrated.
NS	Indicates that the compound was not added to the sample

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG3669684-1	Extraction Date	14-Dec-21
Analysis Method	PAH by CARB 429		
Analysis Type	blank		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3669684

Approved:
Peter Nguyen
--e-signature--
21-Dec-2021

Run Information	**Run 1**
Filename	211217007.D
Run Date	12/17/2021 19:12
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US1306512H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	
Naphthalene	2.81	42.5	M	R
2-Methylnaphthalene	3.39	<12	U	
1-Methylnaphthalene	3.50	<12	U	
Acenaphthylene	NotFnd	<12	U	
Acenaphthene	NotFnd	<12	U	
Fluorene	5.75	<12	U	
Phenanthrene	7.93	<12	U	
Anthracene	NotFnd	<12	U	
Fluoranthene	NotFnd	<12	U	
Pyrene	NotFnd	<12	U	
Benzo(a)Anthracene	NotFnd	<12	U	
Chrysene/Triphenylene	NotFnd	<12	U	
Benzo(b)Fluoranthene	NotFnd	<12	U	
Benzo(k)Fluoranthene	NotFnd	<12	U	
Benzo(e)Pyrene	NotFnd	<12	U	
Benzo(a)Pyrene	NotFnd	<12	U	
Perylene	NotFnd	<12	U	
Indeno(1,2,3-cd)Pyrene	NotFnd	<12	U	
Dibenzo(a,c/a,h)Anthracene	NotFnd	<12	U	
Benzo(g,h,i)Perylene	NotFnd	<12	U	
Additional Analytes				
Tetralin	2.69	<12	U	
2-Chloronaphthalene	NotFnd	<12	U	
Biphenyl	3.93	<12	U	
o-Terphenyl	NotFnd	<12	U	
1-Methylphenanthrene	NotFnd	<12	U	
9-Methylphenanthrene	NotFnd	<12	U	
2-methylanthracene	NotFnd	<12	U	
9,10-dimethylanthracene	NotFnd	<12	U	
m-terphenyl	NotFnd	<12	U	
p-terphenyl	NotFnd	<12	U	
Benzo(a)fluorene	NotFnd	<12	U	
Benzo(b)fluorene	NotFnd	<12	U	
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U	
3-Methylcholanthrene	NotFnd	<60	U	
Picene	NotFnd	<60	U	
Dibenzo(a,e)pyrene	NotFnd	<60	U	
Coronene	NotFnd	<60	U	

Field Sampling Standards	**ng spiked**	**% Rec**
1-Methylnaphthalene-D10	0	NS
Fluorene D10	0	NS
Terphenyl D14(Surr.)	0	NS

Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	2.79	87.5		50-150
2-Methylnaphthalene-D10	600	3.36	112.3		50-150
Acenaphthylene D8	600	4.51	76.2		50-150
Phenanthrene D10	600	7.88	113.5		50-150
Anthracene-D10	600	8.00	70.1		50-150
Fluoranthene D10	600	11.27	105.2		50-150
Benz(a)Anthracene-D12	600	15.80	83.7		50-150
Chrysene D12	600	15.91	94.3	M	50-150
Benzo(b)Fluoranthene-D12	600	19.13	104.3		50-150
Benzo(k)Fluoranthene-D12	600	19.22	73.2	M	50-150
Benzo(a)Pyrene D12	600	20.00	79.9	M	50-150
Perylene D12	600	20.24	80.1	M	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.66	106.8		50-150
Dibenz(a,h)Anthracene-D14	600	23.82	104.1		50-150
Benzo(g,h,i)Perylene D12	600	24.62	104.4		50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
NS	Indicates that the compound was not added to the sample

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-SVOC-(1 THRU 5) TEST#1 APC OUTLET#1**	Sampling Date	1-Dec-21
ALS Sample ID	L2669132-1	Extraction Date	14-Dec-21
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3669684

Approved:
Peter Nguyen
--e-signature--
21-Dec-2021

Run Information	**Run 1**
Filename	211217010.D
Run Date	12/17/2021 21:06
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US1306512H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.80	603	M
2-Methylnaphthalene	3.38	222	M
1-Methylnaphthalene	3.49	93.5	
Acenaphthylene	4.52	48.5	M
Acenaphthene	NotFnd	<12	U
Fluorene	5.74	59.0	
Phenanthrene	7.93	692	
Anthracene	8.05	77.5	
Fluoranthene	11.33	436	
Pyrene	11.97	454	
Benzo(a)Anthracene	15.87	<12	U
Chrysene/Triphenylene	15.99	26.5	
Benzo(b)Fluoranthene	19.22	22.0	M R
Benzo(k)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	19.94	12.3	M
Benzo(a)Pyrene	20.07	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	23.74	<12	U
Dibenzo(a,c/a,h)Anthracene	NotFnd	<12	U
Benzo(g,h,i)Perylene	24.73	39.2	M
Additional Analytes			
Tetralin	2.68	269	M R
2-Chloronaphthalene	3.98	<12	U
Biphenyl	3.91	121	
o-Terphenyl	9.21	<12	U
1-Methylphenanthrene	9.50	83.3	R
9-Methylphenanthrene	9.60	29.3	M
2-methylanthracene	9.66	55.5	R
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	12.36	16.8	M
p-terphenyl	12.84	<12	U
Benzo(a)fluorene	13.12	16.1	
Benzo(b)fluorene	13.43	14.8	M R
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	NotFnd	<60	U
Coronene	29.36	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	500	3.46	79.4
Fluorene D10	500	5.68	139
Terphenyl D14(Surr.)	500	12.77	124.5

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.79	80.8	50-150
2-Methylnaphthalene-D10	600	3.35	104.8	50-150
Acenaphthylene D8	600	4.50	72.1	50-150
Phenanthrene D10	600	7.88	100.9 M	50-150
Anthracene-D10	600	8.00	65.8	50-150
Fluoranthene D10	600	11.27	105.6	50-150
Benz(a)Anthracene-D12	600	15.80	92.0	50-150
Chrysene D12	600	15.91	90.0 M	50-150
Benzo(b)Fluoranthene-D12	600	19.13	108.5	50-150
Benzo(k)Fluoranthene-D12	600	19.22	82.1 M	50-150
Benzo(a)Pyrene D12	600	20.01	80.2 M	50-150
Perylene D12	600	20.24	72.5	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.66	96.6	50-150
Dibenz(a,h)Anthracene-D14	600	23.82	100.4	50-150
Benzo(g,h,i)Perylene D12	600	24.63	101.1	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-SVOC-(6 THRU 10) TEST#2 APC OUTLET#1**	Sampling Date	1-Dec-21
ALS Sample ID	L2669132-2	Extraction Date	14-Dec-21
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3669684

Approved:
Peter Nguyen
--e-signature--
21-Dec-2021

Run Information	**Run 1**
Filename	211217011.D
Run Date	12/17/2021 21:44
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US1306512H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.80	210 M	B
2-Methylnaphthalene	3.38	68.2 M	
1-Methylnaphthalene	3.49	36.7	
Acenaphthylene	NotFnd	<12	U
Acenaphthene	4.81	38.8 M	
Fluorene	5.72	246	R
Phenanthrene	7.93	238	
Anthracene	8.04	<12	U
Fluoranthene	11.32	68.5	
Pyrene	11.97	138 M	
Benzo(a)Anthracene	15.87	<12	U
Chrysene/Triphenylene	15.99	<12	U
Benzo(b)Fluoranthene	19.22	14.5	R
Benzo(k)Fluoranthene	19.25	<12	U
Benzo(e)Pyrene	19.94	20.8	
Benzo(a)Pyrene	NotFnd	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	NotFnd	<12	U
Dibenzo(a,c/a,h)Anthracene	NotFnd	<12	U
Benzo(g,h,i)Perylene	24.73	40.7 M	
Additional Analytes			
Tetralin	2.68	74.0 M	
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.91	95.3	
o-Terphenyl	9.20	12.4 M	
1-Methylphenanthrene	9.50	75.6	R
9-Methylphenanthrene	9.60	40.4	
2-methylanthracene	9.67	58.2	R
9,10-dimethylanthracene	12.10	213	R
m-terphenyl	12.36	<12	U
p-terphenyl	12.84	<12	U
Benzo(a)fluorene	13.11	<12	U
Benzo(b)fluorene	13.35	<12	U
7,12-Dimethylbenzo(a)anthracene	19.31	<12	U
3-Methylcholanthrene	21.36	136 M	R
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	NotFnd	<60	U
Coronene	29.36	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	500	3.45	77.1
Fluorene D10	500	5.68	171.5
Terphenyl D14(Surr.)	500	12.77	115.5 M

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.79	85.6	50-150
2-Methylnaphthalene-D10	600	3.35	107.5	50-150
Acenaphthylene D8	600	4.50	69.7	50-150
Phenanthrene D10	600	7.87	107.8 M	50-150
Anthracene-D10	600	8.00	74.4	50-150
Fluoranthene D10	600	11.27	106.9	50-150
Benz(a)Anthracene-D12	600	15.79	76.0	50-150
Chrysene D12	600	15.91	81.1 M	50-150
Benzo(b)Fluoranthene-D12	600	19.13	109.5 M	50-150
Benzo(k)Fluoranthene-D12	600	19.22	84.7 M	50-150
Benzo(a)Pyrene D12	600	20.00	80.9 M	50-150
Perylene D12	600	20.24	80.6 M	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.66	90.9	50-150
Dibenz(a,h)Anthracene-D14	600	23.82	94.5	50-150
Benzo(g,h,i)Perylene D12	600	24.62	96.1	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-SVOC-(11 THRU 15) TEST#3 APC OUTLET#1**	Sampling Date	2-Dec-21
ALS Sample ID	L2669132-3	Extraction Date	14-Dec-21
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3669684

Approved:
Peter Nguyen
--e-signature--
21-Dec-2021

Run Information	**Run 1**
Filename	211217012.D
Run Date	12/17/2021 22:22
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US1306512H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.80	2460	
2-Methylnaphthalene	3.38	475	
1-Methylnaphthalene	3.49	257	
Acenaphthylene	4.52	179	
Acenaphthene	4.82	<12	U
Fluorene	5.74	20.7	
Phenanthrene	7.93	113	
Anthracene	8.05	15.0	
Fluoranthene	11.33	31.9	
Pyrene	11.97	40.4 M	
Benzo(a)Anthracene	NotFnd	<12	U
Chrysene/Triphenylene	NotFnd	<12	U
Benzo(b)Fluoranthene	19.22	16.1	R
Benzo(k)Fluoranthene	19.26	<12	U
Benzo(e)Pyrene	19.94	16.0 M	
Benzo(a)Pyrene	NotFnd	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	23.75	<12	U
Dibenzo(a,c/a,h)Anthracene	NotFnd	<12	U
Benzo(g,h,i)Perylene	24.73	46.1	
Additional Analytes			
Tetralin	2.68	93.0 M	R
2-Chloronaphthalene	3.97	<12	U
Biphenyl	3.91	121 M	
o-Terphenyl	9.20	<12	U
1-Methylphenanthrene	9.50	47.9	R
9-Methylphenanthrene	9.61	18.2	R
2-methylanthracene	9.66	32.3	R
9,10-dimethylanthracene	12.11	19.8 M	R
m-terphenyl	12.36	<12	U
p-terphenyl	12.84	<12	U
Benzo(a)fluorene	NotFnd	<12	U
Benzo(b)fluorene	NotFnd	<12	U
7,12-Dimethylbenzo(a)anthracene	19.35	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	NotFnd	<60	U
Coronene	29.36	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	500	3.46	77.5
Fluorene D10	500	5.68	127
Terphenyl D14(Surr.)	500	12.77	120.4 M

Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	2.79	108.2	R	50-150
2-Methylnaphthalene-D10	600	3.35	122.1		50-150
Acenaphthylene D8	600	4.50	65.2		50-150
Phenanthrene D10	600	7.88	117.0 M		50-150
Anthracene-D10	600	8.00	58.1		50-150
Fluoranthene D10	600	11.27	118.3 M		50-150
Benz(a)Anthracene-D12	600	15.80	79.4 M		50-150
Chrysene D12	600	15.91	91.1 M		50-150
Benzo(b)Fluoranthene-D12	600	19.13	124.4		50-150
Benzo(k)Fluoranthene-D12	600	19.22	93.2 M		50-150
Benzo(a)Pyrene D12	600	20.00	68.4 M		50-150
Perylene D12	600	20.24	73.5 M		50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.66	97.2		50-150
Dibenz(a,h)Anthracene-D14	600	23.82	98.1		50-150
Benzo(g,h,i)Perylene D12	600	24.62	101.3		50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-SVOC-(16 THRU 20) BLANK1**	Sampling Date	2-Dec-21
ALS Sample ID	L2669132-4	Extraction Date	14-Dec-21
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3669684

Approved:
Peter Nguyen
--e-signature--
21-Dec-2021

Run Information	**Run 1**
Filename	211217009.D
Run Date	12/17/2021 20:28
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US1306512H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.80	110 M	B
2-Methylnaphthalene	3.38	<12 U	
1-Methylnaphthalene	3.50	<12 U	
Acenaphthylene	4.54	<12 U	
Acenaphthene	NotFnd	<12 U	
Fluorene	5.81	<12 U	
Phenanthrene	7.93	<12 U	
Anthracene	8.05	<12 U	
Fluoranthene	NotFnd	<12 U	
Pyrene	NotFnd	<12 U	
Benzo(a)Anthracene	NotFnd	<12 U	
Chrysene/Triphenylene	NotFnd	<12 U	
Benzo(b)Fluoranthene	NotFnd	<12 U	
Benzo(k)Fluoranthene	NotFnd	<12 U	
Benzo(e)Pyrene	NotFnd	<12 U	
Benzo(a)Pyrene	NotFnd	<12 U	
Perylene	NotFnd	<12 U	
Indeno(1,2,3-cd)Pyrene	NotFnd	<12 U	
Dibenzo(a,c/a,h)Anthracene	NotFnd	<12 U	
Benzo(g,h,i)Perylene	NotFnd	<12 U	
Additional Analytes			
Tetralin	2.68	92.0 M	R
2-Chloronaphthalene	3.95	<12 U	
Biphenyl	3.92	16.4 M	
o-Terphenyl	NotFnd	<12 U	
1-Methylphenanthrene	9.50	23.3 M	R
9-Methylphenanthrene	NotFnd	<12 U	
2-methylanthracene	NotFnd	<12 U	
9,10-dimethylanthracene	12.21	<12 U	
m-terphenyl	NotFnd	<12 U	
p-terphenyl	NotFnd	<12 U	
Benzo(a)fluorene	NotFnd	<12 U	
Benzo(b)fluorene	NotFnd	<12 U	
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12 U	
3-Methylcholanthrene	NotFnd	<60 U	
Picene	NotFnd	<60 U	
Dibenzo(a,e)pyrene	NotFnd	<60 U	
Coronene	NotFnd	<60 U	

Field Sampling Standards	**ng spiked**		**% Rec**	
1-Methylnaphthalene-D10	500	3.46	81	
Fluorene D10	500	5.68	102	
Terphenyl D14(Surr.)	500	12.77	122.6 M	
Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.79	89.1	50-150
2-Methylnaphthalene-D10	600	3.35	116.5	50-150
Acenaphthylene D8	600	4.50	71.4	50-150
Phenanthrene D10	600	7.88	116.6	50-150
Anthracene-D10	600	8.00	68.6 M	50-150
Fluoranthene D10	600	11.27	119.2	50-150
Benz(a)Anthracene-D12	600	15.80	99.5	50-150
Chrysene D12	600	15.91	103.1 M	50-150
Benzo(b)Fluoranthene-D12	600	19.13	116.1 M	50-150
Benzo(k)Fluoranthene-D12	600	19.22	87.2 M	50-150
Benzo(a)Pyrene D12	600	20.00	79.3 M	50-150
Perylene D12	600	20.24	79.4 M	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.66	108.0	50-150
Dibenz(a,h)Anthracene-D14	600	23.82	111.8	50-150
Benzo(g,h,i)Perylene D12	600	24.63	112.3	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3669684-2	Extraction Date	14-Dec-21
Analysis Method	PAH by CARB 429		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3669684

Approved:
Peter Nguyen
--e-signature--
21-Dec-2021

Run Information	**Run 1**
Filename	211217005.D
Run Date	12/17/2021 17:56
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-5
Column	HP-5MS US1306512H

Target Analytes	**ug spiked**	**Ret. Time**	**%**	**Flags**	**Limits**
Naphthalene	600	2.80	120.1	M	50-150
2-Methylnaphthalene	600	3.39	100.6		50-150
1-Methylnaphthalene	600	3.50	101.5		50-150
Acenaphthylene	600	4.52	109.1		50-150
Acenaphthene	600	4.82	115.3		50-150
Fluorene	600	5.74	107.5		50-150
Phenanthrene	600	7.93	109.9		50-150
Anthracene	600	8.05	120.7	M	50-150
Fluoranthene	600	11.33	101.1		50-150
Pyrene	600	11.97	96.3		50-150
Benzo(a)Anthracene	600	15.87	105.0		50-150
Chrysene/Triphenylene	600	15.99	110.6		50-150
Benzo(b)Fluoranthene	600	19.20	91.0	M	50-150
Benzo(k)Fluoranthene	600	19.27	115.8		50-150
Benzo(e)Pyrene	600	19.94	118.0	M	50-150
Benzo(a)Pyrene	600	20.07	101.0	M	50-150
Perylene	600	20.31	99.3		50-150
Indeno(1,2,3-cd)Pyrene	600	23.74	84.8		50-150
Dibenzo(a,c/a,h)Anthracene	600	23.94	98.7		50-150
Benzo(g,h,i)Perylene	600	24.73	87.4		50-150

Field Sampling Standards	**ng spiked**	**% Rec**
1-Methylnaphthalene-D10	0	NS
Fluorene D10	0	NS
Terphenyl D14(Surr.)	0	NS

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	2.79	104.5	30-150
2-Methylnaphthalene-D10	600	3.35	128.5	30-150
Acenaphthylene D8	600	4.50	87.8	30-150
Phenanthrene D10	600	7.88	136.8 M	50-150
Anthracene-D10	600	8.00	89.3	50-150
Fluoranthene D10	600	11.27	116.5 M	50-150
Benz(a)Anthracene-D12	600	15.80	90.4	50-150
Chrysene D12	600	15.91	102.9 M	50-150
Benzo(b)Fluoranthene-D12	600	19.13	114.7	50-150
Benzo(k)Fluoranthene-D12	600	19.21	90.5 M	50-150
Benzo(a)Pyrene D12	600	20.00	91.2 M	30-150
Perylene D12	600	20.24	84.6	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.66	110.2	50-150
Dibenz(a,h)Anthracene-D14	600	23.82	111.4	50-150
Benzo(g,h,i)Perylene D12	600	24.62	112.6	50-150

M Indicates that a peak has been manually integrated.

NS Indicates that the compound was not added to the sample

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Rd.
ALS WO#:	L2671585		Mississauga, ON L5J 2Y4
Date of Report	17-Jan-22		Canada
Date of Sample Receipt	10-Dec-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS: **PAH by CARB method 429 (LR option)- Isotope dilution**

Certified by:

Ron McLeod, Ph.D.
Director, Air Toxics & Special Chemistries, Life Sciences

Results in this certificate relate only to the samples as submitted to the laboratory.
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ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		21-22085-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2		21-22085-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2		21-22085-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2		21-22085-SVOC-(36 THRU 40) BLANK2		Laboratory Control Sample	
ALS Sample ID	WG3673320-1		L2671585-1		L2671585-2		L2671585-3		L2671585-4		WG3673320-2	
Sample Size	1		1		1		1		1		1	
Sample units	sample		sample		sample		sample		sample		n/a	
Moisture Content	n/a		n/a		n/a		n/a		n/a		n/a	
Matrix	QC		Stack		Stack		Stack		Stack		QC	
Sampling Date	n/a		9-Dec-21		9-Dec-21		10-Dec-21		10-Dec-21		n/a	
Extraction Date	21-Dec-21		21-Dec-21		21-Dec-21		21-Dec-21		21-Dec-21		21-Dec-21	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**%**	
Naphthalene	61.6		134	B	252	B	203	B	98.1	B	112.6	B
2-Methylnaphthalene	25.0		39.6	M,B	85.7	M,B	61.3	M,B	23.2	M,B	98.6	B
1-Methylnaphthalene	17.0		22.3	B	47.6	B	30.9	B	12.2	B	106.4	B
Acenaphthylene	119	R	<12	U	<12	U	<12	U	<12	U	108.7	B
Acenaphthene	<12	U	<12	U	<12	U	<12	U	<12	U	130.6	
Fluorene	<12	U	14.9		18.6		15.9		<12	U	107	
Phenanthrene	12.5		114	B	133		192		32.7	B	110.3	B
Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U	113.2	
Fluoranthene	<12	U	36.8	R	49.0	R	38.2	R	14.9	M	103.3	
Pyrene	<12	U	50.9	R	50.9	R	43.6		24.3		105.9	
Benzo(a)Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U	106	
Chrysene/Triphenylene	<12	U	<12	U	<12	U	<12	U	<12	U	113.5	R
Benzo(b)Fluoranthene	<12	U	<12	U	<12	U	<12	U	<12	U	90.1	R
Benzo(k/j)Fluoranthene	<12	U	<12	U	<12	U	<12	U	<12	U	115.7	
Benzo(e)Pyrene	<12	U	<12	U	<12	U	13.5	M	13.7	M,R	101.8	
Benzo(a)Pyrene	14.9	R	<12	U	<12	U	<12	U	<12	U	122.2	RB
Perylene	<12	U	<12	U	<12	U	<12	U	<12	U	116.5	
Indeno(1,2,3-cd)Pyrene	<12	U	<12	U	<12	U	<12	U	16.2		100.5	R
Dibenzo(a,c & a,h)Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U	114.8	R
Benzo(g,h,i)Perylene	<12	U	57.0	M	<12	U	43.7	M	98.0	R	95.5	R
Additional Analytes												
Tetralin	16.6		34.3	M,B	91.7	B	43.3	M,B	26.8	B		
2-Chloronaphthalene	24.1	M,R	<12	U	<12	U	<12	U	<12	U		
Biphenyl	12.1	M	25.9	M,B	38.3	B	37.0	M,B	<12	U		
o-Terphenyl	<12	U	<12	U	<12	U	<12	U	<12	U		
1-Methylphenanthrene	<12	U	<12	U	<12	U	<12	U	<12	U		
9-Methylphenanthrene	<12	U	15.4		15.9		27.6		<12	U		
2-methylanthracene	<12	U	32.2	R	35.8	R	62.9	M,R	<12	U		
9,10-dimethylanthracene	<12	U	<12	U	21.2	R	<12	U	<12	U		
m-terphenyl	<12	U	<12	U	<12	U	<12	U	<12	U		
p-terphenyl	<12	U	<12	U	<12	U	<12	U	<12	U		
Benzo(a)fluorene	<12	U	<12	U	<12	U	<12	U	<12	U		
Benzo(b)fluorene	<12	U	<12	U	<12	U	<12	U	<12	U		
7,12-Dimethylbenzo(a)anthracene	<12	U	<12	U	<12	U	<12	U	<12	U		
3-Methylcholanthrene	<60	U	<60	U	<60	U	<60	U	<60	U		
Picene	<60	U	<60	U	<60	U	<60	U	<60	U		
Dibenzo(a,e)pyrene	<60	U	<60	U	<60	U	<60	U	<60	U		
Coronene	<60	U	69.7	R	<60	U	<60	U	89.3	M		
Field Sampling Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
1-Methylnaphthalene-D10	0	NS	61.1		58.1		60.7		62.2		0	NS
Fluorene D10	0	NS	95.8		84.8		97.9		95.8		0	NS
Terphenyl D14(Surr.)	0	NS	82.9	R	82.8	R	79.5	R	76.1	R	0	NS
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
Naphthalene D8	47.1		72.5		60.1		40.8		35.2		62.4	
2-Methylnaphthalene-D10	54.3		81.6		69.3		46.8		43.6		66.3	
Acenaphthylene D8	68.3		67.6		53.5		36.8		45.8		51.1	
Phenanthrene D10	59.7		84.8		82.8		52.3		53.9		63.2	
Anthracene-D10	57.9		71.2		68.8		42.1		47.8		52.4	
Fluoranthene D10	60.9		78.2		81.8		44.7		48.5		59.4	
Benz(a)Anthracene-D12	60.6		50.7		52.4		29.5		27.8		48.2	
Chrysene D12	49.6		45		46.8		24.1		24.8		42.2	
Benzo(b)Fluoranthene-D12	40.6		79.6		82.2		46.2		45.6		55.9	
Benzo(k)Fluoranthene-D12	50	M	63.4		65.3		34.9		36.2		52.2	
Benzo(a)Pyrene D12	63.7		74.8		74.1		44.6		47.5		66.5	
Perylene D12	47.3		61.3		59.3		42.4		36.4		56.4	
Indeno(1,2,3,cd)Pyrene-D12	31.6		72.2		76.9		43		35.2		49	
Dibenz(a,h)Anthracene-D14	23.8		54.6		56.3		34		24.9		35.4	
Benzo(g,h,i)Perylene D12	34		67.3		71.2		39.2		34.8		49.2	

U	Indicates that this compound was not detected above the LOD.
M	Indicates that a peak has been manually integrated.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
NS	Indicates that the compound was not added to the sample

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG3673320-1	Extraction Date	21-Dec-21
Analysis Method	PAH by CARB 429		
Analysis Type	blank		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3673320

Approved:
Peter Nguyen
--e-signature--
12-Jan-2022

Run Information	**Run 1**
Filename	220111042.D
Run Date	1/11/2022 18:57
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US1306536H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.68	61.6	
2-Methylnaphthalene	3.25	25.0	
1-Methylnaphthalene	3.35	17.0	
Acenaphthylene	4.35	119	R
Acenaphthene	4.63	<12	U
Fluorene	5.53	<12	U
Phenanthrene	7.69	12.5	
Anthracene	7.79	<12	U
Fluoranthene	11.04	<12	U
Pyrene	11.68	<12	U
Benzo(a)Anthracene	NotFnd	<12	U
Chrysene/Triphenylene	NotFnd	<12	U
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(k/j)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	NotFnd	<12	U
Benzo(a)Pyrene	20.14	14.9	R
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	NotFnd	<12	U
Dibenzo(a,c & a,h)Anthracene	NotFnd	<12	U
Benzo(g,h,i)Perylene	NotFnd	<12	U
Additional Analytes			
Tetralin	2.57	16.6	
2-Chloronaphthalene	3.74	24.1 M	R
Biphenyl	3.76	12.1 M	
o-Terphenyl	NotFnd	<12	U
1-Methylphenanthrene	NotFnd	<12	U
9-Methylphenanthrene	9.34	<12	U
2-methylanthracene	9.40	<12	U
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	NotFnd	<12	U
p-terphenyl	NotFnd	<12	U
Benzo(a)fluorene	NotFnd	<12	U
Benzo(b)fluorene	NotFnd	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	NotFnd	<60	U
Coronene	NotFnd	<60	U

Field Sampling Standards	**ng spiked**	**% Rec**
1-Methylnaphthalene-D10	0	NS
Fluorene D10	0	NS
Terphenyl D14(Surr.)	0	NS

Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	2.67	47.1		50-150
2-Methylnaphthalene-D10	600	3.22	54.3		50-150
Acenaphthylene D8	600	4.33	68.3		50-150
Phenanthrene D10	600	7.63	59.7		50-150
Anthracene-D10	600	7.75	57.9	R	50-150
Fluoranthene D10	600	11.00	60.9	R	50-150
Benz(a)Anthracene-D12	600	15.51	60.6	R	50-150
Chrysene D12	600	15.62	49.6	R	50-150
Benzo(b)Fluoranthene-D12	600	18.83	40.6	R	50-150
Benzo(k)Fluoranthene-D12	600	18.92	50.0 M		50-150
Benzo(a)Pyrene D12	600	19.71	63.7	R	50-150
Perylene D12	600	19.94	47.3	R	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.20	31.6		50-150
Dibenz(a,h)Anthracene-D14	600	23.36	23.8		50-150
Benzo(g,h,i)Perylene D12	600	24.12	34.0		50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
NS	Indicates that the compound was not added to the sample

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**21-22085-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2**	Sampling Date	9-Dec-21
ALS Sample ID	L2671585-1	Extraction Date	21-Dec-21
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3673320

Approved:
Peter Nguyen
--e-signature--
12-Jan-2022

Run Information	**Run 1**
Filename	220111044.D
Run Date	1/11/2022 20:13
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US1306536H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.68	134	B
2-Methylnaphthalene	3.25	39.6 M	B
1-Methylnaphthalene	3.36	22.3	B
Acenaphthylene	4.35	<12	U
Acenaphthene	4.63	<12	U
Fluorene	5.53	14.9	
Phenanthrene	7.68	114	B
Anthracene	7.80	<12	U
Fluoranthene	11.05	36.8	R
Pyrene	11.68	50.9	R
Benzo(a)Anthracene	15.57	<12	U
Chrysene/Triphenylene	15.68	<12	U
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(k/j)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	19.64	<12	U
Benzo(a)Pyrene	NotFnd	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	23.29	<12	U
Dibenzo(a,c & a,h)Anthracene	NotFnd	<12	U
Benzo(g,h,i)Perylene	24.22	57.0 M	
Additional Analytes			
Tetralin	2.57	34.3 M	B
2-Chloronaphthalene	3.78	<12	U
Biphenyl	3.76	25.9 M	B
o-Terphenyl	8.95	<12	U
1-Methylphenanthrene	9.20	<12	U
9-Methylphenanthrene	9.34	15.4	
2-methylanthracene	9.40	32.2	R
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	12.09	<12	U
p-terphenyl	12.57	<12	U
Benzo(a)fluorene	NotFnd	<12	U
Benzo(b)fluorene	NotFnd	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	NotFnd	<60	U
Coronene	28.94	69.7	R

Field Sampling Standards	**ng spiked**		**% Rec**	
1-Methylnaphthalene-D10	600	3.32	61.1	
Fluorene D10	600	5.47	95.8	
Terphenyl D14(Surr.)	600	12.50	82.9	R

Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	2.67	72.5		50-150
2-Methylnaphthalene-D10	600	3.22	81.6		50-150
Acenaphthylene D8	600	4.32	67.6		50-150
Phenanthrene D10	600	7.63	84.8		50-150
Anthracene-D10	600	7.75	71.2	R	50-150
Fluoranthene D10	600	11.00	78.2	R	50-150
Benz(a)Anthracene-D12	600	15.51	50.7	R	50-150
Chrysene D12	600	15.62	45.0	R	50-150
Benzo(b)Fluoranthene-D12	600	18.83	79.6	R	50-150
Benzo(k)Fluoranthene-D12	600	18.91	63.4	R	50-150
Benzo(a)Pyrene D12	600	19.71	74.8	R	50-150
Perylene D12	600	19.95	61.3	R	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.20	72.2		50-150
Dibenz(a,h)Anthracene-D14	600	23.36	54.6		50-150
Benzo(g,h,i)Perylene D12	600	24.12	67.3		50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2**	Sampling Date	9-Dec-21
ALS Sample ID	L2671585-2	Extraction Date	21-Dec-21
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3673320

Approved:
Peter Nguyen
--e-signature--
12-Jan-2022

Run Information	**Run 1**
Filename	220111045.D
Run Date	1/11/2022 20:51
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US1306536H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.68	252	B
2-Methylnaphthalene	3.25	B5.7 M	B
1-Methylnaphthalene	3.35	47.6	B
Acenaphthylene	4.35	<12	U
Acenaphthene	4.63	<12	U
Fluorene	5.53	18.6	
Phenanthrene	7.69	133	
Anthracene	7.79	<12	U
Fluoranthene	11.04	49.0	R
Pyrene	11.68	50.9	R
Benzo(a)Anthracene	NotFnd	<12	U
Chrysene/Triphenylene	15.69	<12	U
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(k/j)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	19.65	<12	U
Benzo(a)Pyrene	NotFnd	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	NotFnd	<12	U
Dibenzo(a,c & a,h)Anthracene	NotFnd	<12	U
Benzo(g,h,i)Perylene	24.22	<12	U
Additional Analytes			
Tetralin	2.57	91.7	B
2-Chloronaphthalene	3.78	<12	U
Biphenyl	3.76	38.3	B
o-Terphenyl	8.95	<12	U
1-Methylphenanthrene	9.22	<12	U
9-Methylphenanthrene	9.34	15.9	
2-methylanthracene	9.40	35.8	R
9,10-dimethylanthracene	11.86	21.2	R
m-terphenyl	12.09	<12	U
p-terphenyl	12.57	<12	U
Benzo(a)fluorene	12.83	<12	U
Benzo(b)fluorene	13.04	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	NotFnd	<60	U
Coronene	NotFnd	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**	
1-Methylnaphthalene-D10	600	3.32	58.1	
Fluorene D10	600	5.48	84.8	
Terphenyl D14(Surr.)	600	12.50	82.8	R

Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	2.67	60.1		50-150
2-Methylnaphthalene-D10	600	3.22	69.3		50-150
Acenaphthylene D8	600	4.33	53.5		50-150
Phenanthrene D10	600	7.63	82.8	R	50-150
Anthracene-D10	600	7.76	68.8	R	50-150
Fluoranthene D10	600	11.00	81.8	R	50-150
Benz(a)Anthracene-D12	600	15.50	52.4	R	50-150
Chrysene D12	600	15.62	46.8	R	50-150
Benzo(b)Fluoranthene-D12	600	18.83	82.2	R	50-150
Benzo(k)Fluoranthene-D12	600	18.92	65.3	R	50-150
Benzo(a)Pyrene D12	600	19.71	74.1	R	50-150
Perylene D12	600	19.94	59.3	R	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.21	76.9		50-150
Dibenz(a,h)Anthracene-D14	600	23.36	56.3		50-150
Benzo(g,h,i)Perylene D12	600	24.12	71.2		50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2**	Sampling Date	10-Dec-21
ALS Sample ID	L2671585-3	Extraction Date	21-Dec-21
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3673320

Approved:
Peter Nguyen
--e-signature--
12-Jan-2022

Run Information	**Run 1**
Filename	220111046.D
Run Date	1/11/2022 21:29
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US1306536H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	2.68	203	B
2-Methylnaphthalene	3.25	61.3 M	B
1-Methylnaphthalene	3.36	30.9	B
Acenaphthylene	4.35	<12	U
Acenaphthene	4.63	<12	U
Fluorene	5.53	15.9	
Phenanthrene	7.69	192	
Anthracene	NotFnd	<12	U
Fluoranthene	11.04	38.2	R
Pyrene	11.69	43.6	
Benzo(a)Anthracene	NotFnd	<12	U
Chrysene/Triphenylene	15.69	<12	U
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(k/j)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	19.64	13.5 M	
Benzo(a)Pyrene	NotFnd	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	23.29	<12	U
Dibenzo(a,c & a,h)Anthracene	NotFnd	<12	U
Benzo(g,h,i)Perylene	24.23	43.7 M	
Additional Analytes			
Tetralin	2.57	43.3 M	B
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	3.76	37.0 M	B
o-Terphenyl	8.96	<12	U
1-Methylphenanthrene	9.21	<12	U
9-Methylphenanthrene	9.34	27.6	
2-methylanthracene	9.40	62.9 M	R
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	12.09	<12	U
p-terphenyl	12.57	<12	U
Benzo(a)fluorene	NotFnd	<12	U
Benzo(b)fluorene	NotFnd	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<60	U
Picene	NotFnd	<60	U
Dibenzo(a,e)pyrene	NotFnd	<60	U
Coronene	28.94	<60	U

Field Sampling Standards	**ng spiked**		**% Rec**	
1-Methylnaphthalene-D10	600	3.32	60.7	
Fluorene D10	600	5.48	97.9	
Terphenyl D14(Surr.)	600	12.50	79.5	R

Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	2.67	40.8		50-150
2-Methylnaphthalene-D10	600	3.22	46.8		50-150
Acenaphthylene D8	600	4.33	36.8		50-150
Phenanthrene D10	600	7.63	52.3		50-150
Anthracene-D10	600	7.76	42.1	R	50-150
Fluoranthene D10	600	11.00	44.7	R	50-150
Benz(a)Anthracene-D12	600	15.50	29.5	R	50-150
Chrysene D12	600	15.62	24.1	R	50-150
Benzo(b)Fluoranthene-D12	600	18.84	46.2	R	50-150
Benzo(k)Fluoranthene-D12	600	18.92	34.9	R	50-150
Benzo(a)Pyrene D12	600	19.71	44.6	R	50-150
Perylene D12	600	19.94	42.4	R	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.21	43.0		50-150
Dibenz(a,h)Anthracene-D14	600	23.37	34.0		50-150
Benzo(g,h,i)Perylene D12	600	24.12	39.2		50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-SVOC-(36 THRU 40) BLANK2**	Sampling Date	10-Dec-21
ALS Sample ID	L2671585-4	Extraction Date	21-Dec-21
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3673320

Approved:
Peter Nguyen
--e-signature--
12-Jan-2022

Run Information	**Run 1**
Filename	220111043.D
Run Date	1/11/2022 19:35
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-5
Column	HP-5MS US1306536H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	
Naphthalene	2.68	98.1		B
2-Methylnaphthalene	3.25	23.2 M		B
1-Methylnaphthalene	3.36	12.2		B
Acenaphthylene	NotFnd	<12	U	
Acenaphthene	4.64	<12	U	
Fluorene	5.52	<12	U	
Phenanthrene	7.69	32.7		B
Anthracene	NotFnd	<12	U	
Fluoranthene	11.05	14.9 M		
Pyrene	11.68	24.3		
Benzo(a)Anthracene	NotFnd	<12	U	
Chrysene/Triphenylene	15.69	<12	U	
Benzo(b)Fluoranthene	NotFnd	<12	U	
Benzo(k/j)Fluoranthene	NotFnd	<12	U	
Benzo(e)Pyrene	19.64	13.7 M		R
Benzo(a)Pyrene	NotFnd	<12	U	
Perylene	19.96	<12	U	
Indeno(1,2,3-cd)Pyrene	23.28	16.2		
Dibenzo(a,c & a,h)Anthracene	NotFnd	<12	U	
Benzo(g,h,i)Perylene	24.22	98.0		R
Additional Analytes				
Tetralin	2.57	26.8		B
2-Chloronaphthalene	NotFnd	<12	U	
Biphenyl	3.76	<12	U	
o-Terphenyl	NotFnd	<12	U	
1-Methylphenanthrene	NotFnd	<12	U	
9-Methylphenanthrene	9.34	<12	U	
2-methylanthracene	9.40	<12	U	
9,10-dimethylanthracene	NotFnd	<12	U	
m-terphenyl	12.08	<12	U	
p-terphenyl	NotFnd	<12	U	
Benzo(a)fluorene	NotFnd	<12	U	
Benzo(b)fluorene	NotFnd	<12	U	
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U	
3-Methylcholanthrene	NotFnd	<60	U	
Picene	NotFnd	<60	U	
Dibenzo(a,e)pyrene	NotFnd	<60	U	
Coronene	28.94	89.3 M		

Field Sampling Standards	**ng spiked**		**% Rec**	
1-Methylnaphthalene-D10	600	3.32	62.2	
Fluorene D10	600	5.47	95.8	
Terphenyl D14(Surr.)	600	12.50	76.1	R

Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	2.67	35.2		50-150
2-Methylnaphthalene-D10	600	3.21	43.6		50-150
Acenaphthylene D8	600	4.33	45.8		50-150
Phenanthrene D10	600	7.63	53.9	R	50-150
Anthracene-D10	600	7.75	47.8	R	50-150
Fluoranthene D10	600	11.00	48.5	R	50-150
Benz(a)Anthracene-D12	600	15.51	27.8	R	50-150
Chrysene D12	600	15.62	24.8	R	50-150
Benzo(b)Fluoranthene-D12	600	18.83	45.6	R	50-150
Benzo(k)Fluoranthene-D12	600	18.91	36.2	R	50-150
Benzo(a)Pyrene D12	600	19.71	47.5	R	50-150
Perylene D12	600	19.95	36.4	R	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.20	35.2		50-150
Dibenz(a,h)Anthracene-D14	600	23.36	24.9		50-150
Benzo(g,h,i)Perylene D12	600	24.12	34.8		50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3673320-2	Extraction Date	21-Dec-21
Analysis Method	PAH by CARB 429		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG3673320

Approved:
Peter Nguyen
--e-signature--
12-Jan-2022

Run Information	**Run 1**
Filename	220111040.D
Run Date	1/11/2022 17:41
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%
Instrument	MSD-5
Column	HP-5MS US1306536H

Target Analytes	**ug spiked**	**Ret. Time**	**%**	**Flags**	**Limits**
Naphthalene	600	2.68	112.6		50-150
2-Methylnaphthalene	600	3.25	98.6		50-150
1-Methylnaphthalene	600	3.35	106.4		50-150
Acenaphthylene	600	4.35	108.7		50-150
Acenaphthene	600	4.63	130.6		50-150
Fluorene	600	5.53	107		50-150
Phenanthrene	600	7.69	110.3		50-150
Anthracene	600	7.80	113.2		50-150
Fluoranthene	600	11.05	103.3		50-150
Pyrene	600	11.68	105.9		50-150
Benzo(a)Anthracene	600	15.57	106		50-150
Chrysene/Triphenylene	600	15.70	113.5	R	50-150
Benzo(b)Fluoranthene	600	18.90	90.1	R	50-150
Benzo(k/j)Fluoranthene	600	18.97	115.7		50-150
Benzo(e)Pyrene	600	19.64	101.8		50-150
Benzo(a)Pyrene	600	19.77	122.2	R	50-150
Perylene	600	20.01	116.5		50-150
Indeno(1,2,3-cd)Pyrene	600	23.29	100.5	R	50-150
Dibenzo(a,c & a,h)Anthracene	600	23.48	114.8	R	50-150
Benzo(g,h,i)Perylene	600	24.22	95.5	R	50-150

Field Sampling Standards	**ng spiked**	**% Rec**
1-Methylnaphthalene-D10	0	NS
Fluorene D10	0	NS
Terphenyl D14(Surr.)	0	NS

Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	2.67	62.4		30-150
2-Methylnaphthalene-D10	600	3.22	66.3		30-150
Acenaphthylene D8	600	4.32	51.1		30-150
Phenanthrene D10	600	7.63	63.2		50-150
Anthracene-D10	600	7.75	52.4	R	50-150
Fluoranthene D10	600	11.00	59.4	R	50-150
Benz(a)Anthracene-D12	600	15.51	48.2	R	50-150
Chrysene D12	600	15.62	42.2	R	50-150
Benzo(b)Fluoranthene-D12	600	18.83	55.9	R	50-150
Benzo(k)Fluoranthene-D12	600	18.91	52.2	R	50-150
Benzo(a)Pyrene D12	600	19.71	66.5	R	30-150
Perylene D12	600	19.95	56.4	R	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	23.21	49.0		50-150
Dibenz(a,h)Anthracene-D14	600	23.36	35.4		50-150
Benzo(g,h,i)Perylene D12	600	24.12	49.2		50-150

R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
NS	Indicates that the compound was not added to the sample

APPENDIX 16

Acid Gas Recovery Data Sheets
(8 pages)

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22085
Date:	NOV 29, 21
Test No.:	1
Test Location:	U1

Filter is used but not recovered as sample	8786

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	685.0
Initial Wt:	785.5
Final Wt:	896.2
1 Gain:	110.7
Colour:	CLEAR

Impinger #2 0.1 N H_2SO4	
Empty Wt:	669.2
Initial Wt:	772.3
Final Wt:	794.5
2 Gain:	22.2
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	601.0
Final Wt:	604.6
3 Gain:	3.6
Colour:	CLEAR

CONTAINER TS3 WEIGHTS	
Empty Wt:	284.0
With Imp. 1,2,3 Soln:	613.0
After Rinse:	710.0
Total TS3:	426.0

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	948.2
Final Wt:	959.8
4 Gain:	11.6

Box ID: 158

CWTR = 1+2+3:	136.5
WCBDA= 4:	11.6

SAMPLE ID: 21-22085-M26A- 1

Train Loaded By: DT

Train Recovered By:

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22085
Date:	NOV 29, 21
Test No.:	2
Test Location:	U1

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	648.0
Initial Wt:	753.2
Final Wt:	879.0
1 Gain:	125.8
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	646.8
Initial Wt:	740.0
Final Wt:	758.4
2 Gain:	18.4
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	597.5
Final Wt:	600.8
3 Gain:	3.3
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	284.0
With Imp. 1,2,3 Soln:	623.0
After Rinse:	712.2
Total TS3:	428.2

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	889.4
Final Wt:	898.4
4 Gain:	9.0

Box ID:

CWTR = 1+2+3:	147.5
WCBDA= 4:	9.0

SAMPLE ID: 21-22085-M26A- 2

Train Loaded By:

Train Recovered By:

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22085
Date:	NOV 29, 21
Test No.:	3
Test Location:	U 1

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	685.6
Initial Wt:	782.5
Final Wt:	~~879.0~~ 925.0
1 Gain:	142.5
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	669.2
Initial Wt:	775.0
Final Wt:	~~758~~ 797.7
2 Gain:	22.7
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	601.0
Final Wt:	604.5
3 Gain:	3.5
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	282.0
With Imp. 1,2,3 Soln:	647.8
After Rinse:	723.0
Total TS3:	441.0

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	959.8
Final Wt:	966.9
4 Gain:	7.1

Box ID:

CWTR = 1+2+3:	168.7 ✓
WCBDA= 4:	7.1

SAMPLE ID: 21-22085-M26A- 3

Train Loaded By:

Train Recovered By: DT

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22085
Date:	NOV 30/21
Test No.:	BLANK 1
Test Location:	

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	
Initial Wt:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #2 0.1 N H_2SO4	
Empty Wt:	
Initial Wt:	
Final Wt:	
2 Gain:	
Colour:	

Impinger #3 EMPTY	
Empty Wt:	
Final Wt:	
3 Gain:	
Colour:	

CONTAINER TS3 WEIGHTS	
Empty Wt:	282.0
With Imp. 1,2,3 Soln:	486.0
After Rinse:	582.1
Total TS3:	30.1

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	
Final Wt:	
4 Gain:	

Box ID:

CWTR = 1+2+3:
WCBDA= 4:

SAMPLE ID: 21-22085-M26A- BLANK 1

Train Loaded By: DK

Train Recovered By:

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22085
Date:	NOV 30/21
Test No.:	1
Test Location:	U2

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	648.0
Initial Wt:	750.8
Final Wt:	885.7
1 Gain:	134.9
Colour:	Clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	646.8
Initial Wt:	749.6
Final Wt:	764.4
2 Gain:	14.8
Colour:	Clear

Impinger #3 EMPTY	
Empty Wt:	597.5
Final Wt:	602.7
3 Gain:	5.2
Colour:	Clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	281.5
With Imp. 1,2,3 Soln:	677.4
After Rinse:	727.3
Total TS3:	445.8

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	898.4
Final Wt:	908.1
4 Gain:	9.7

Box ID:

CWTR = 1+2+3:	154.9
WCBDA= 4:	9.7

SAMPLE ID: 21-22085-M26A- 4

Train Loaded By:

Train Recovered By: DT

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22085
Date:	Nov 30/21
Test No.:	2
Test Location:	U 2

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	685.0
Initial Wt:	779.7
Final Wt:	915.0
1 Gain:	135.3
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	669.0
Initial Wt:	771.5
Final Wt:	793.2
2 Gain:	21.7
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	600.7
Final Wt:	604.5
3 Gain:	3.8
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	282.5
With Imp. 1,2,3 Soln:	636.6
After Rinse:	749.0
Total TS3:	466.5

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	923.4
Final Wt:	935.6
4 Gain:	12.2

Box ID: Blue 2-

CWTR = 1+2+3:	160.8
WCBDA= 4:	12.2

SAMPLE ID: 21-22085-M26A- 5

Train Loaded By: DT

Train Recovered By:

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22085
Date:	DEC 1/21
Test No.:	3
Test Location:	U 2

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	649.0
Initial Wt:	745.2
Final Wt:	875.2
1 Gain:	130.0
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	647.6
Initial Wt:	750.1
Final Wt:	774.5
2 Gain:	24.4
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	598.3
Final Wt:	601.6
3 Gain:	3.3
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	282.9
With Imp. 1,2,3 Soln:	637.3
After Rinse:	724.3
Total TS3:	441.4

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	910.0
Final Wt:	917.5
4 Gain:	7.5

Box ID:

CWTR = 1+2+3:	157.7
WCBDA= 4:	7.5

SAMPLE ID: 21-22085-M26A- 6

Train Loaded By:

Train Recovered By: AT

ORTECH Consulting Inc.
Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	22085
Date:	NOV 30/21
Test No.:	BLANK 2
Test Location:	

Filter is used but not recovered as sample

Impingers 1, 2, 3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	
Initial Wt:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #2 0.1 N H_2SO4	
Empty Wt:	
Initial Wt:	
Final Wt:	
2 Gain:	
Colour:	

Impinger #3 EMPTY	
Empty Wt:	
Final Wt:	
3 Gain:	
Colour:	

CONTAINER TS3 WEIGHTS	
Empty Wt:	283.5
With Imp. 1,2,3 Soln:	482.7
After Rinse:	591.8
Total TS3:	308.3

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	
Final Wt:	
4 Gain:	

Box ID:

CWTR = 1+2+3:
WCBDA= 4:

SAMPLE ID: 21-22085-M26A- BLANK 2

Train Loaded By:

Train Recovered By:

APPENDIX 17

VOST Analytical Reports
(6 pages)

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2669187		Mississauga, ON
Date of Report	20-Dec-21		L5J 2Y4
Date of Sample Receipt	3-Dec-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS: **VOCs via SW846 Method 5041A/8260C**

Ketone data by VOST analyses are estimated values only

Certified by:

Ron McLeod, Ph.D.
Technical Director

Results in this certificate relate only to the samples as submitted to the laboratory.
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ALS Environmental

Sample Analysis Summary Report

Sample Name	21-22085-VOST-1A,B TEST#1 APC OUTLET#1		21-22085-VOST-2A,B TEST#2 APC OUTLET#1		21-22085-VOST-3A,B TEST#3 APC OUTLET#1		21-22085-VOST-5A,B FIELD BLANK	
ALS Sample ID	L2669187-1		L2669187-2		L2669187-3		L2669187-5	
Sample units	sample		sample		sample		sample	
Matrix	VOST		VOST		VOST		VOST	
Sampling Date	1-Dec-21		1-Dec-21		1-Dec-21		1-Dec-21	
Extraction Date	10-Dec-21		10-Dec-21		10-Dec-21		10-Dec-21	
Target Analytes	**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**	
Dichlorodifluoromethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Vinyl Chloride	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Bromomethane	<0.09	U	<0.09	U	<0.09	U	<0.09	U
Trichlorofluoromethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U
1,1-Dichloroethene	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Acetone	0.119		<0.1	U	0.106		<0.1	U
Methylene Chloride	0.146		0.111		0.131		<0.1	U
trans,1,2-Dichloroethene	<0.01	U	<0.01	U	<0.01	U	<0.01	U
2-Butanone	0.027		0.02		0.024		0.02	
Chloroform	0.029		0.022		0.026		<0.01	U
1,1,1-Trichloroethane	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Carbon Tetrachloride	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Benzene	0.147		0.102		0.122		0.14	
1,2-Dichloroethane	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Trichloroethene	<0.01	U	<0.01	U	<0.01	U	<0.01	U
1,2-Dichloropropane	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Bromodichloromethane	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Toluene	2.00		0.944		1.52		0.248	
1,1,2-Trichloroethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Tetrachloroethene	0.011		<0.01	U	<0.01	U	<0.01	U
Chlorodibromomethane	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Ethylene Dibromide	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Ethylbenzene	<0.01	U	<0.01	U	<0.01	U	<0.01	U
M&P-Xylene	<0.03	U	<0.03	U	<0.03	U	<0.03	U
O-Xylene	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Styrene	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Bromoform	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Isopropylbenzene	<0.02	U	<0.02	U	<0.02	U	<0.02	U
1,3,5-Trimethylbenzene	<0.02	U	<0.02	U	<0.02	U	0.035	
1,3-Butadiene	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Trichlorotrifluoroethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Field Standard	**% Rec**		**% Rec**		**% Rec**		**% Rec**	
d10-Ethylbenzene(SPK)	92.9		84.6		103.3		57.9	
Surrogate Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**	
d4-1,2-Dichloroethane(SURR)	108.5		95.6	R	112.4		109.4	
d8-Toluene(SURR)	125.8		111.9		113.3		126.5	
4-Bromofluorobenzene(SURR)	113.8		108.2		105.4		64.8	
Internal Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**	
Bromochloromethane	85.2		106.3		95.7		119.5	
1,4-Difluorobenzene	70.1		64.7		76.2		125.7	
d5-Chlorobenzene	93.4		82.1		89.3		81.6	

U Indicates that this compound was not detected above the RL.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		Laboratory Control Sample	
ALS Sample ID	WG3673003-1		WG3673003-2	
Sample units	sample		n/a	
Matrix	QC		QC	
Sampling Date	n/a		n/a	
Extraction Date	10-Dec-21		10-Dec-21	
Target Analytes	**ug/sample**		**% Rec**	
Dichlorodifluoromethane	<0.02	U	87.3	
Vinyl Chloride	<0.02	U	81.4	
Bromomethane	<0.09	U	94.1	
Trichlorofluoromethane	<0.02	U	75	
1,1-Dichloroethene	<0.01	U	106.9	
Acetone	<0.1	U	93.1	
Methylene Chloride	<0.1	U	81.5	R
trans,1,2-Dichloroethene	<0.01	U	95.9	
2-Butanone	<0.01	U	119.2	
Chloroform	<0.01	U	92.1	
1,1,1-Trichloroethane	<0.01	U	106.1	
Carbon Tetrachloride	<0.01	U	86.2	
Benzene	<0.05	U	117.8	
1,2-Dichloroethane	<0.01	U	114.4	
Trichloroethene	<0.01	U	116.2	
1,2-Dichloropropane	<0.01	U	102.2	
Bromodichloromethane	<0.01	U	96.5	
Toluene	<0.05	U	90.5	
1,1,2-Trichloroethane	<0.02	U	108.7	
Tetrachloroethene	<0.01	U	91.1	
Chlorodibromomethane	<0.01	U	107.1	
Ethylene Dibromide	<0.02	U	88.2	
Ethylbenzene	<0.01	U	112.9	
M&P-Xylene	<0.03	U	109	
O-Xylene	<0.01	U	114.4	
Styrene	<0.02	U	121.4	
Bromoform	<0.01	U	113.6	
Isopropylbenzene	<0.02	U	116.5	
1,3,5-Trimethylbenzene	<0.02	U	103.7	
1,3-Butadiene	<0.02	U		
Trichlorotrifluoroethane	<0.02	U		
Field Standard	**% Rec**		**% Rec**	
d10-Ethylbenzene(SPK)	96		87.4	
Surrogate Standards	**% Rec**		**% Rec**	
d4-1,2-Dichloroethane(SURR)	111.4		119.8	
d8-Toluene(SURR)	103.5		91.1	
4-Bromofluorobenzene(SURR)	112		120.6	
Internal Standards	**% Rec**		**% Rec**	
Bromochloromethane	95.3		111.3	
1,4-Difluorobenzene	136.9		142.1	
d5-Chlorobenzene	62.8		104.8	

U Indicates that this compound was not detected above the RL.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2671358		Mississauga, ON L5J 2Y4
Date of Report	21-Dec-21		Canada
Date of Sample Receipt	10-Dec-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS: **VOCs via SW846 Method 5041A/8260C**

Ketone data by VOST analyses are estimated values only.

Certified by:

Ron McLeod, Ph.D.
Technical Director

Results in this certificate relate only to the samples as submitted to the laboratory.
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ALS Environmental

Sample Analysis Summary Report

Sample Name	21-22085-VOST-6 TEST#1 APC OUTLET#2		21-22085-VOST-7 TEST#2 APC OUTLET#2		21-22085-VOST-8 TEST#3 APC OUTLET#2		21-22085-VOST-10 FIELD BLANK APC OUTLET#2		21-22085-VOST-11 TRIP BLANK	
ALS Sample ID	L2671358-1		L2671358-2		L2671358-3		L2671358-5		L2671358-6	
Sample units	sample		sample		sample		sample		sample	
Matrix	VOST		VOST		VOST		VOST		VOST	
Sampling Date	9-Dec-21		9-Dec-21		9-Dec-21		9-Dec-21		9-Dec-21	
Extraction Date	19-Dec-21		19-Dec-21		19-Dec-21		19-Dec-21		19-Dec-21	
Target Analytes	**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**	
Dichlorodifluoromethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Vinyl Chloride	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Bromomethane	<0.09	U	<0.09	U	<0.09	U	<0.09	U	<0.09	U
Trichlorofluoromethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
1,1-Dichloroethene	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Acetone	0.183		0.221		0.109		<0.1	U	0.107	
Methylene Chloride	0.225		0.272		0.135		<0.1	U	0.239	R
trans,1,2-Dichloroethene	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
2-Butanone	0.042		0.05		0.025		0.019		<0.01	U
Chloroform	0.045		0.055		0.027		<0.01	U	<0.01	U
1,1,1-Trichloroethane	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Carbon Tetrachloride	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Benzene	0.219		0.253		0.166		0.158		<0.05	U
1,2-Dichloroethane	0.012		0.013		<0.01	U	<0.01	U	<0.01	U
Trichloroethene	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
1,2-Dichloropropane	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Bromodichloromethane	<0.01	U	0.011		<0.01	U	<0.01	U	<0.01	U
Toluene	0.311		0.375		0.245		0.305		<0.05	U
1,1,2-Trichloroethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Tetrachloroethene	0.017		0.02		0.013		<0.01	U	<0.01	U
Chlorodibromomethane	<0.01	U	0.012		<0.01	U	<0.01	U	<0.01	U
Ethylene Dibromide	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Ethylbenzene	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
M&P-Xylene	<0.03	U	<0.03	U	<0.03	U	<0.03	U	<0.03	U
O-Xylene	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Styrene	0.027		0.032		0.021		<0.02	U	<0.02	U
Bromoform	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Isopropylbenzene	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
1,3,5-Trimethylbenzene	<0.02	U	0.023		<0.02	U	0.043		<0.02	U
1,3-Butadiene	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Trichlorotrifluoroethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Field Standard	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
d10-Ethylbenzene(SPK)	103.1		79.9		69.7		121.6		105.3	
Surrogate Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
d4-1,2-Dichloroethane(SURR)	94.4		99.8	R	121.5		122.5		98.6	
d8-Toluene(SURR)	101.9		114.4		95.6		96.2		92	
4-Bromofluorobenzene(SURR)	118.4		125.2		95.6		108.8		103	
Internal Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
Bromochloromethane	79.2		83		92		64.5		73.5	
1,4-Difluorobenzene	73.4		91.6		102.4		91.9		85.1	M
d5-Chlorobenzene	97.8		93.4		85.6		74.8		57.8	

U Indicates that this compound was not detected above the RL.

M Indicates that a peak has been manually integrated.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		Laboratory Control Sample	
ALS Sample ID	WG3677022-1		WG3677022-2	
Sample units	sample		n/a	
Matrix	QC		QC	
Sampling Date	n/a		n/a	
Extraction Date	19-Dec-21		19-Dec-21	
Target Analytes	**ug/sample**		**% Rec**	
Dichlorodifluoromethane	<0.02	U	97.8	
Vinyl Chloride	<0.02	U	91.2	
Bromomethane	<0.09	U	105.4	
Trichlorofluoromethane	<0.02	U	84	
1,1-Dichloroethene	<0.01	U	119.8	
Acetone	<0.1	U	104.3	
Methylene Chloride	<0.1	U	91.3	R
trans,1,2-Dichloroethene	<0.01	U	107.4	
2-Butanone	<0.01	U	133.5	
Chloroform	<0.01	U	103.1	
1,1,1-Trichloroethane	<0.01	U	118.9	
Carbon Tetrachloride	<0.01	U	80.8	
Benzene	<0.05	U	110.3	
1,2-Dichloroethane	<0.01	U	107.2	
Trichloroethene	<0.01	U	108.8	
1,2-Dichloropropane	<0.01	U	95.7	
Bromodichloromethane	<0.01	U	90.4	
Toluene	<0.05	U	78.7	
1,1,2-Trichloroethane	<0.02	U	94.6	
Tetrachloroethene	<0.01	U	79.2	
Chlorodibromomethane	<0.01	U	93.2	
Ethylene Dibromide	<0.02	U	76.7	
Ethylbenzene	<0.01	U	98.3	
M&P-Xylene	<0.03	U	94.9	
O-Xylene	<0.01	U	99.5	
Styrene	<0.02	U	105.6	
Bromoform	<0.01	U	98.8	
Isopropylbenzene	<0.02	U	101.3	
1,3,5-Trimethylbenzene	<0.02	U	90.2	
1,3-Butadiene	<0.02	U		
Trichlorotrifluoroethane	<0.02	U		
Field Standard	**% Rec**		**% Rec**	
d10-Ethylbenzene(SPK)	105.6		96.1	
Surrogate Standards	**% Rec**		**% Rec**	
d4-1,2-Dichloroethane(SURR)	99.1		106.6	
d8-Toluene(SURR)	115.9		102.1	
4-Bromofluorobenzene(SURR)	105.3		113.3	
Internal Standards	**% Rec**		**% Rec**	
Bromochloromethane	102.9		92.6	
1,4-Difluorobenzene	100		131.2	
d5-Chlorobenzene	65.8		90.2	

U Indicates that this compound was not detected above the RL.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

APPENDIX 18

Aldehydes Recovery Data Sheet
(1 page)

ORTECH Consulting Inc. Recovery & Sample Log
NCASI Method ISS/FP-A105.01

Client: Covanata DYEC
Job/Report Number: 22085
Received By: Chris Belore
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO #: 22085 - J2819

Test Number	Test Location	ORTECH Sample ID 21-22085-	Date Sampled	ID of BHA Sample Bottle	Empty Weight BHA Sample Bottle (g)	Initial Weight Sample Bottle + BHA (g)	Final Weight of BHA Sample Bottle (g)	Weight of Sample Bottle BHA & H2O (g)	Weight of Sample Bottle BHA & H2O & Hexane (g)
1	APC Outlet #1	ALD-1		ALD-1	109.1	157.7	159.8	171.2	177.6
2	APC Outlet #1	ALD-2		ALD-2	108.9	157.8	158.4	173.5	180.3
3	APC Outlet #1	ALD-3		ALD-3	109.4	158.8	163.1	183.0	190.9
Blank 1	APC Outlet #1	Blank 1		ALD-4	109.3	158.8	158.8	172.0	179.1
1	APC Outlet #2	ALD~~4~~ 5	12/09/21	ALD-5	109.0	158.4	161.3	169.6	175.8
2	APC Outlet #2	ALD~~5~~ 6	"	ALD-6	109.6	158.9	165.8	180.8	188.5
~~3~~	~~APC Outlet #2~~	~~ALD-7~~		~~ALD-7~~	~~109.1~~	~~159.4~~	~~16~~		
Blank 2	APC Outlet #2	Blank 2	12/09/21	ALD-8	108.5	159.1	167.1 ↔	159.0	176.4
3	APC Outlet #2		12/09/21	ALD-9	109.1	160.2	162.1	169.4	176.4
	Field BHA&Spike		na	na	na	na	na	na	na
	BHA Blank		na	na	na	na	na	na	na
				ALD-10	109.5	162.1			

Analyze each sample for Acetaldehyde, Formaldehyde, Acrolein.

Relinquished by: _____ **Date:** _____

Relinquished to: Aaron Burton **Date:** 10-Dec-2021 9:40 9.6°C

APPENDIX 19

Aldehydes Analytical Reports
(20 pages)

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2669191		Mississauga, ON L5J 2Y4
Date of Report	22-Dec-21		Canada
Date of Sample Receipt	3-Dec-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS: **Aldehydes as benzyloxime derivatives by SIM GC/MS**

Certified by:

Ron McLeod, PhD
Laboratory Manager and Technical Director

Results in this certificate relate only to the samples as submitted to the laboratory.
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ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		21-22085-ALD-1 TEST#1 APC OUTLET#1		21-22085-ALD-2 TEST#2 APC OUTLET#1		21-22085-ALD-3 TEST#3 APC OUTLET#1		21-22085-BLANK-1		Laboratory Control Sample (5ug)
ALS Sample ID	WG3669762-1		L2669191-1		L2669191-2		L2669191-3		L2669191-4		WG3669762-2
Sample Size	1		1		1		1		1		1
Sample units	n/a		Train		Train		Train		Train		n/a
Moisture Content	n/a		n/a		n/a		n/a		n/a		n/a
Matrix	QC		Stack		Stack		Stack		Stack		QC
Sampling Date	n/a		1-Dec-21		1-Dec-21		1-Dec-21		1-Dec-21		n/a
Extraction Date	13-Dec-21		13-Dec-21		13-Dec-21		13-Dec-21		13-Dec-21		13-Dec-21
Target Analytes	**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**		**ug/sample**		**% Rec**
Formaldehyde	0.65		0.82		1.05		1.19		0.88		71
Acetaldehyde	<0.1	U	3.05		2.48		2.83		3.25		49
Acrolein	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U	29

U Indicates that this compound was not detected above the LOD.

ALS Environmental

Sample Analysis Summary Report

Sample Name	Laboratory Control Sample (1ug)
ALS Sample ID	WG3669762-4
Sample Size	1
Sample units	na
Moisture Content	n/a
Matrix	QC
Sampling Date	n/a
Extraction Date	13-Dec-21

Target Analytes	% Rec
Formaldehyde	126
Acetaldehyde	89
Acrolein	24

U Indicates that this compound was not detected above the LOD.

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG3669762-1	Extraction Date	13-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	blank		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
22-Dec-2021

Run Information	**Run 1**
Filename	21122107.D
Run Date	12/21/2021 18:23
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.28	0.65		
Acetaldehyde (B)	NotFnd	<0.1	U	
Acetaldehyde (A)	NotFnd	<0.1	U	
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	

Total Aldehydes	**ug/sample**
Formaldehyde	0.65
Acetaldehyde	<0.1
Acrolein	<0.1

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-ALD-1 TEST#1 APC OUTLET#1**	Sampling Date	1-Dec-21
ALS Sample ID	L2669191-1	Extraction Date	13-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
22-Dec-2021

Run Information	**Run 1**
Filename	21122109.D
Run Date	12/21/2021 19:43
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.28	0.82		
Acetaldehyde (B)	14.37	1.3		
Acetaldehyde (A)	14.72	1.75		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	

Total Aldehydes	**ug/sample**
Formaldehyde	0.82
Acetaldehyde	3.05
Acrolein	<0.1

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-ALD-2 TEST#2 APC OUTLET#1**	Sampling Date	1-Dec-21
ALS Sample ID	L2669191-2	Extraction Date	13-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
22-Dec-2021

Run Information	**Run 1**
Filename	21122110.D
Run Date	12/21/2021 20:23
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.27	1.05		
Acetaldehyde (B)	14.37	1.06		
Acetaldehyde (A)	14.71	1.42		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	

Total Aldehydes	**ug/sample**
Formaldehyde	1.05
Acetaldehyde	2.48
Acrolein	<0.1

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-ALD-3 TEST#3 APC OUTLET#1**	Sampling Date	1-Dec-21
ALS Sample ID	L2669191-3	Extraction Date	13-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
22-Dec-2021

Run Information	**Run 1**
Filename	21122111.D
Run Date	12/21/2021 21:04
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.27	1.19		
Acetaldehyde (B)	14.35	1.21		
Acetaldehyde (A)	14.69	1.62		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	

Total Aldehydes	**ug/sample**
Formaldehyde	1.19
Acetaldehyde	2.83
Acrolein	<0.1

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-BLANK-1**	Sampling Date	1-Dec-21
ALS Sample ID	L2669191-4	Extraction Date	13-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
22-Dec-2021

Run Information	**Run 1**
Filename	21122108.D
Run Date	12/21/2021 19:03
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.27	0.88		
Acetaldehyde (B)	14.37	1.39		
Acetaldehyde (A)	14.71	1.86		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	

Total Aldehydes	**ug/sample**
Formaldehyde	0.88
Acetaldehyde	3.25
Acrolein	<0.1

U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3669762-2	Extraction Date	13-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
22-Dec-2021

Run Information	**Run 1**
Filename	21122104.D
Run Date	12/21/2021 16:22
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**ug spiked**	**Ret. Time**	**% Rec**	**Flags**	**Limits**
Formaldehyde	5	9.28	71		
Acetaldehyde (B)	5	14.39	22		
Acetaldehyde (A)	5	14.73	27		
Acrolein (A)	5	18.90	13		
Acrolein (B)	5	20.00	16		
Total Aldehydes					
Formaldehyde			71		70-130
Acetaldehyde			49		70-130
Acrolein			29		70-130

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3669762-4	Extraction Date	13-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
22-Dec-2021

Run Information	**Run 1**
Filename	21122103.D
Run Date	12/21/2021 15:41
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**ug spiked**	**Ret. Time**	**% Rec**	**Flags**	**Limits**
Formaldehyde	1	9.28	126		
Acetaldehyde (B)	1	14.41	34		
Acetaldehyde (A)	1	14.74	55		
Acrolein (A)	1	18.92	11		
Acrolein (B)	1	20.02	13		
Total Aldehydes					
Formaldehyde			126		70-130
Acetaldehyde			89		70-130
Acrolein			24		70-130

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2671362		Mississauga, ON L5J 2Y4
Date of Report	31-Jan-22		Canada
Date of Sample Receipt	10-Dec-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS: **Aldehydes as benzyloxime derivatives by SIM GC/MS**

The bias to low LCS recoveries indicates a low bias to the sample data.

Certified by:

Ron McLeod, PhD
Laboratory Manager and Technical Director

Results in this certificate relate only to the samples as submitted to the laboratory.
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ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank	21-22085-ALD-5 TEST#1 APC OUTLET #2	21-22085-ALD-6 TEST#2 APC OUTLET #2	21-22085-ALD-9 TEST#3 APC OUTLET #2	21-22085-ALD-BLANK2 APC OUTLET #2	Laboratory Control Sample (5ug)
ALS Sample ID	WG3673059-1	L2671362-1	L2671362-2	L2671362-3	L2671362-4	WG3673059-2
Sample Size	1	1	1	1	1	1
Sample units	Sample	Sample	Sample	Sample	Sample	n/a
Moisture Content	n/a	n/a	n/a	n/a	n/a	n/a
Matrix	QC	Stack	Stack	Stack	Stack	QC
Sampling Date	n/a	9-Dec-21	9-Dec-21	9-Dec-21	9-Dec-21	n/a
Extraction Date	21-Dec-21	21-Dec-21	21-Dec-21	21-Dec-21	21-Dec-21	21-Dec-21
Target Analytes	**ug/sample**	**ug/sample**	**ug/sample**	**ug/sample**	**ug/sample**	**% Rec**
Formaldehyde	0.14	0.28 B	0.35 B	0.33 B	0.32 B	9
Acetaldehyde	0.33	1.31 B	1.29 B	1.6 B	2.39 B	17
Acrolein	<0.1 U	<0.1 U	<0.1 U	<0.1 U	<0.1 U	12

U Indicates that this compound was not detected above the LOD.

B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Environmental

Sample Analysis Summary Report

Sample Name	Laboratory Control Sample (1ug)
ALS Sample ID	WG3673059-4
Sample Size	1
Sample units	n/a
Moisture Content	n/a
Matrix	QC
Sampling Date	n/a
Extraction Date	21-Dec-21

Target Analytes	% Rec
Formaldehyde	42
Acetaldehyde	39
Acrolein	8

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG3673059-1	Extraction Date	21-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	blank		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
31-Jan-2022

Run Information	**Run 1**
Filename	22013006.D
Run Date	1/30/2022 14:29
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.45	0.14		
Acetaldehyde (B)	14.64	0.11		
Acetaldehyde (A)	14.98	0.22	M	
Acrolein (A)	19.22	<0.1	U	
Acrolein (B)	20.32	<0.1	U	

Total Aldehydes	**ug/sample**
Formaldehyde	0.14
Acetaldehyde	0.33
Acrolein	<0.1

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-ALD-5 TEST#1 APC OUTLET #2**	Sampling Date	9-Dec-21
ALS Sample ID	L2671362-1	Extraction Date	21-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
31-Jan-2022

Run Information	**Run 1**
Filename	22013008.D
Run Date	1/30/2022 15:49
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.44	0.28	B	
Acetaldehyde (B)	14.61	0.52	B	
Acetaldehyde (A)	14.95	0.79	M	
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	

Total Aldehydes	**ug/sample**
Formaldehyde	0.28
Acetaldehyde	1.31
Acrolein	<0.1

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-ALD-6 TEST#2 APC OUTLET #2**	Sampling Date	9-Dec-21
ALS Sample ID	L2671362-2	Extraction Date	21-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
31-Jan-2022

Run Information	**Run 1**
Filename	22013009.D
Run Date	1/30/2022 16:29
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.44	0.35	B	
Acetaldehyde (B)	14.62	0.59	B	
Acetaldehyde (A)	14.96	0.7	M	
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	

Total Aldehydes	**ug/sample**
Formaldehyde	0.35
Acetaldehyde	1.29
Acrolein	<0.1

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-ALD-9 TEST#3 APC OUTLET #2**	Sampling Date	9-Dec-21
ALS Sample ID	L2671362-3	Extraction Date	21-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
31-Jan-2022

Run Information	**Run 1**
Filename	22013010.D
Run Date	1/30/2022 17:10
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.44	0.33	B	
Acetaldehyde (B)	14.62	0.64	B	
Acetaldehyde (A)	14.96	0.96	M	
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	

Total Aldehydes	**ug/sample**
Formaldehyde	0.33
Acetaldehyde	1.6
Acrolein	<0.1

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Life Sciences

Sample Analysis Report

Sample Name	**21-22085-ALD-BLANK2 APC OUTLET #2**	Sampling Date	9-Dec-21
ALS Sample ID	L2671362-4	Extraction Date	21-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
31-Jan-2022

Run Information	**Run 1**
Filename	22013007.D
Run Date	1/30/2022 15:09
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**Ret. Time**	**Concentration ug/sample**	**Flags**	**Limits**
Formaldehyde	9.45	0.32	B	
Acetaldehyde (B)	14.62	1.01	B	
Acetaldehyde (A)	14.97	1.38	M	
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	

Total Aldehydes	**ug/sample**
Formaldehyde	0.32
Acetaldehyde	2.39
Acrolein	<0.1

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3673059-2	Extraction Date	21-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
31-Jan-2022

Run Information	**Run 1**
Filename	22013004.D
Run Date	1/30/2022 13:08
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**ug spiked**	**Ret. Time**	**% Rec**	**Flags**	**Limits**
Formaldehyde	5	9.45	9		
Acetaldehyde (B)	5	14.64	7		
Acetaldehyde (A)	5	14.99	10	M	
Acrolein (A)	5	19.21	7		
Acrolein (B)	5	20.29	5		
Total Aldehydes					
Formaldehyde			9		70-130
Acetaldehyde			17		70-130
Acrolein			12		70-130

M Indicates that a peak has been manually integrated.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG3673059-4	Extraction Date	21-Dec-21
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
31-Jan-2022

Run Information	**Run 1**
Filename	22013003.D
Run Date	1/30/2022 12:28
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ug/sample
Instrument	MSD-2
Column	Rtx-200 1610862

Target Analytes	**ug spiked**	**Ret. Time**	**% Rec**	**Flags**	**Limits**
Formaldehyde	1	9.45	42		
Acetaldehyde (B)	1	14.68	13		
Acetaldehyde (A)	1	15.02	26	M	
Acrolein (A)	1	19.21	4		
Acrolein (B)	1	20.31	4		
Total Aldehydes					
Formaldehyde			42		70-130
Acetaldehyde			39		70-130
Acrolein			8		70-130

M Indicates that a peak has been manually integrated.

APPENDIX 20

SVOC and VOST Proof Data
(14 pages)

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2651683		Mississauga, ON, L5J 2Y4
Date of Report	23-Nov-21		Canada
Date of Sample Receipt	15-Oct-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS: **CB by LRGC/MS - Isotope dilution**

Certified by: _____
Ron McLeod, Ph.D.
Technical Director

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ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		GLASSWARE PROOF	
ALS Sample ID	WG3650694-1		L2651683-20	
Sample Size	1		1	
Sample units	sample		sample	
Moisture Content	n/a		n/a	
Matrix	QC		Media Prep	
Sampling Date	n/a		n/a	
Extraction Date	4-Nov-21		4-Nov-21	
Target Analytes	**ng/sample**		**ng/sample**	
Chlorobenzene	<10	U	<10	U
1,3-Dichlorobenzene	<10	U	<10	U
1,4-Dichlorobenzene	<10	U	<10	U
1,2-Dichlorobenzene	<10	U	<10	U
1,3,5-Trichlorobenzene	<10	U	<10	U
1,2,4-Trichlorobenzene	<10	U	<10	U
1,2,3-Trichlorobenzene	<10	U	<10	U
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<10	U	<10	U
1,2,3,4-Tetrachlorobenzene	<10	U	<10	U
Pentachlorobenzene	<10	U	<10	U
Hexachlorobenzene	<10	U	<10	U
Extraction Standards	**%Rec**		**%Rec**	
13C6-Chlorobenzene	24		51	
13C6-1,4-Dichlorobenzene	89		93	
13C6-1,2,3-Trichlorobenzene	96		101	
13C6-1,2,3,4-Tetrachlorobenzene	75		71	
13C6-Pentachlorobenzene	81		80	
13C6-Hexachlorobenzene	81		83	

U	Indicates that this compound was not detected above the LOD.
M	Indicates that a peak has been manually integrated.

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2651683		Mississauga, ON, L5J 2Y4
Date of Report	17-Nov-21		Canada
Date of Sample Receipt	15-Oct-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS: **PAH by CARB method 429 (LR option)- Isotope dilution**

Certified by:

Ron McLeod, Ph.D.
Technical Director

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ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank		GLASSWARE PROOF	
ALS Sample ID	WG3650694-1		L2651683-20	
Sample Size	1		1	
Sample units	sample		sample	
Moisture Content	n/a		n/a	
Matrix	QC		Media Prep	
Sampling Date	n/a		n/a	
Extraction Date	1-Nov-21		1-Nov-21	
Target Analytes	**ng/sample**		**ng/sample**	
Naphthalene	<10	U	88.0	R
2-Methylnaphthalene	<10	U	<10	U
1-Methylnaphthalene	<10	U	<10	U
Acenaphthylene	<10	U	<10	U
Acenaphthene	<10	U	<10	U
Fluorene	<10	U	<10	U
Phenanthrene	<10	U	<10	U
Anthracene	<10	U	<10	U
Fluoranthene	<10	U	<10	U
Pyrene	<10	U	<10	U
Benzo(a)Anthracene	<10	U	<10	U
Chrysene/Triphenylene	<10	U	<10	U
Benzo(b)Fluoranthene	<10	U	<10	U
Benzo(k)Fluoranthene	<10	U	<10	U
Benzo(e)Pyrene	<10	U	<10	U
Benzo(a)Pyrene	<10	U	<10	U
Perylene	<10	U	<10	U
Indeno(1,2,3-cd)Pyrene	<10	U	<10	U
Dibenzo(a,c/a,h)Anthracene	<10	U	<10	U
Benzo(g,h,i)Perylene	<10	U	<10	U
Additional Analytes				
Tetralin	42.1	M,R	58.7	RB
Quinoline	<10	U	<10	U
2-Chloronaphthalene	<10	U	<10	U
Biphenyl	<10	U	<10	U
o-Terphenyl	<10	U	<10	U
1-Methylphenanthrene	<10	U	<10	U
9-Methylphenanthrene	<10	U	<10	U
2-methylanthracene	<10	U	<10	U
9,10-dimethylanthracene	<10	U	<10	U
m-terphenyl	<10	U	<10	U
p-terphenyl	<10	U	<10	U
Benzo(a)fluorene	<10	U	<10	U
Benzo(b)fluorene	<10	U	<10	U
Benzo(b)anthracene	<10	U	<10	U
Benzo(j)fluoranthene	<10	U	<10	U
7,12-Dimethylbenzo(a)anthracene	<10	U	<10	U
3-Methylcholanthrene	<50	U	<50	U
Dibenz(a,j)acridine	<50	U	<50	U
7H-Dibenzo(c,g)carbazole	<50	U	<50	U
Picene	<50	U	<50	U
Dibenzo(a,e)pyrene	<50	U	<50	U
dibenzo(a,i)pyrene	<50	U	<50	U
Coronene	<50	U	<50	U
Extraction Standards	**% Rec**		**% Rec**	
Naphthalene D8	106.1		94.4	R
2-Methylnaphthalene-D10	130.1	M	126.2	
Acenaphthylene D8	85.5		100.9	
Phenanthrene D10	131.1		108.9	
Anthracene-D10	81.1		82.5	
Fluoranthene D10	112.3		119.2	
Benz(a)Anthracene-D12	58		114.5	
Chrysene D12	77.6	R	121.5	R
Benzo(b)Fluoranthene-D12	80.2		86.4	
Benzo(k)Fluoranthene-D12	53.6		75.2	M
Benzo(a)Pyrene D12	54.4	M	118.5	
Perylene D12	58.3	M	78.5	M
Indeno(1,2,3,cd)Pyrene-D12	55.8		70.2	
Dibenz(a,h)Anthracene-D14	47.8	M	73.1	M
Benzo(g,h,i)Perylene D12	73.4	M	85.2	M

U	Indicates that this compound was not detected above the LOD.
M	Indicates that a peak has been manually integrated.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2651683		Mlssissauga, ON L5J 2Y4
Date of Report	23-Nov-21		Canada
Date of Sample Receipt	15-Oct-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS: **Chlorophenols as acetate derivatives by SIM GC/MS**

Certified by:

Ron McLeod, PhD
Laboratory Manager and Technical Director

Results in this certificate relate only to the samples as submitted to the laboratory.
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ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		GLASSWARE PROOF	
ALS Sample ID	WG3650694-1		L2651683-20	
Sample Size	1		1	
Sample units	sample		sample	
Moisture Content	n/a		n/a	
Matrix	QC		Media Prep	
Sampling Date	n/a		n/a	
Extraction Date	4-Nov-21		4-Nov-21	
Target Analytes	**ng/sample**		**ng/sample**	
2-Chlorophenol	<50	U	<50	U
3-Chlorophenol	<50	U	<50	U
4-Chlorophenol	<50	U	<50	U
2,6-Dichlorophenol	<50	U	<50	U
2,4/2,5-Dichlorophenol	<50	U	<50	U
3,5-Dichlorophenol	<50	U	<50	U
2,3-Dichlorophenol	<50	U	<50	U
3,4-Dichlorophenol	<50	U	<50	U
2,4,6-Trichlorophenol	<50	U	<50	U
2,3,6-Trichlorophenol	<50	U	<50	U
2,3,5-Trichlorophenol	<50	U	<50	U
2,4,5-Trichlorophenol	<50	U	<50	U
2,3,4-Trichlorophenol	<50	U	<50	U
3,4,5-Trichlorophenol	<50	U	<50	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	<50	U	<50	U
2,3,4,5-Tetrachlorophenol	<50	U	<50	U
Pentachlorophenol	<50	U	<50	U
Hexachlorophene	<50	U	<50	U
Extraction Standards	**% Rec**		**% Rec**	
13C6-4-Chlorophenol (ES)	51		57	M
13C6-2,4-Dichlorophenol (ES)	52		59	M
13C6-2,4,5-Trichlorophenol (ES)	49		49	M
13C6-2,3,4,5-Tetrachlorophenol (ES)	48		59	M
13C6-Pentachlorophenol (ES)	44		51	

U	Indicates that this compound was not detected above the LOR.
M	Indicates that a peak has been manually integrated.

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2651683		Mississauga, ON, L5J 2Y4
Date of Report	26-Nov-21		Canada
Date of Sample Receipt	15-Oct-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS: **PCB Congeners by EPA 1668C**

Certified by:

Ron McLeod, PhD
Director, Air Toxics & Special Chemistries, Life Sciences

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ALS Life Sciences

Sample Analysis Summary Report

Sample Name	GLASSWARE PROOF
ALS Sample ID	L2651683-20
Sample Size	1
Sample size units	Sample
Percent Moisture	n/a
Sample Matrix	Media prep
Sampling Date	n/a
Extraction Date	4-Nov-21

Target Analytes	pg
PCB-081	<4.6
PCB-077	5.78
PCB-123	<4.6
PCB-118	<16
PCB-114	<4.2
PCB-105	12.2
PCB-126	<4.2
PCB-167	<2.7
PCB-156/157	<3.6
PCB-169	<2.6
PCB-189	<2.4
Extraction Standards	**% Rec**
13C12-PCB-081	83
13C12-PCB-077	78
13C12-PCB-123	82
13C12-PCB-118	78
13C12-PCB-105	93
13C12-PCB-126	99
13C12-PCB-167	76
13C12-PCB-156/157	79
13C12-PCB-169	94
13C12-PCB-189	82

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCB TEQ	0.000944
Mid Point PCB TEQ	0.251
Upper Bound PCB TEQ	0.501

ALS Life Sciences

Quality Control Summary Report

Sample Name	Method Blank
ALS Sample ID	WG3650694-1
Sample Size	1
Sample size units	Blank
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	4-Nov-21

Target Analytes	pg
PCB-081	<1.6
PCB-077	<3.3
PCB-123	<2.3
PCB-118	<2.2
PCB-114	<2.2
PCB-105	<2.1
PCB-126	<2.0
PCB-167	<1.0
PCB-156/157	<0.96
PCB-169	<0.98
PCB-189	<0.91
Extraction Standards	**% Rec**
13C12-PCB-081	71
13C12-PCB-077	73
13C12-PCB-123	72
13C12-PCB-118	68
13C12-PCB-114	73
13C12-PCB-105	77
13C12-PCB-126	93
13C12-PCB-167	77
13C12-PCB-156/157	109
13C12-PCB-169	97
13C12-PCB-189	97

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCB TEQ	0.00
Mid Point PCB TEQ	0.115
Upper Bound PCB TEQ	0.231

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2651683		Mississauga, ON L5J 2Y4
Date of Report	24-Nov-21		Canada
Date of Sample Receipt	15-Oct-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS: **PCDD/F by EPA 1613B via Isotope Dilution**

Certified by:

Ron McLeod, PhD, C.Chem.
Director, Air Toxics & Special Chemistries, Life Sciences

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ALS Life Sciences

Sample Analysis Summary Report

Sample Name	GLASSWARE PROOF
ALS Sample ID	L2651683-20
Sample Size	1
Sample size units	Glassware proof
Percent Moisture	n/a
Sample Matrix	Media prep
Sampling Date	n/a
Extraction Date	4-Nov-21
Target Analytes	**pg/g**
2,3,7,8-TCDD	<5.3
1,2,3,7,8-PeCDD	<11
1,2,3,4,7,8-HxCDD	<12
1,2,3,6,7,8-HxCDD	<5.9
1,2,3,7,8,9-HxCDD	<5.0
1,2,3,4,6,7,8-HpCDD	<7.8
OCDD	<12
2,3,7,8-TCDF	<6.5
1,2,3,7,8-PeCDF	<7.7
2,3,4,7,8-PeCDF	<3.3
1,2,3,4,7,8-HxCDF	<3.2
1,2,3,6,7,8-HxCDF	<4.4
2,3,4,6,7,8-HxCDF	<4.7
1,2,3,7,8,9-HxCDF	<8.6
1,2,3,4,6,7,8-HpCDF	<2.7
1,2,3,4,7,8,9-HpCDF	<2.2
OCDF	<9.8
Extraction Standards	**% Rec**
13C12-2,3,7,8-TCDD	67
13C12-1,2,3,7,8-PeCDD	58
13C12-1,2,3,4,7,8-HxCDD	59
13C12-1,2,3,6,7,8-HxCDD	93
13C12-1,2,3,4,6,7,8-HpCDD	53
13C12-OCDD	49
13C12-2,3,7,8-TCDF	60
13C12-1,2,3,7,8-PeCDF	59
13C12-2,3,4,7,8-PeCDF	59
13C12-1,2,3,4,7,8-HxCDF	69
13C12-1,2,3,6,7,8-HxCDF	62
13C12-2,3,4,6,7,8-HxCDF	75
13C12-1,2,3,7,8,9-HxCDF	62
13C12-1,2,3,4,6,7,8-HpCDF	63
13C12-1,2,3,4,7,8,9-HpCDF	63
Homologue Group Totals	**pg/g**
Total-TCDD	<5.3
Total-PeCDD	<11
Total-HxCDD	<12
Total-HpCDD	<7.8
Total-TCDF	<6.5
Total-PeCDF	<7.7
Total-HxCDF	<8.6
Total-HpCDF	<2.7
Toxic Equivalency - (WHO 2005)	
Lower Bound PCDD/F TEQ (WHO 2005)	0.00
Mid Point PCDD/F TEQ (WHO 2005)	11.3
Upper Bound PCDD/F TEQ (WHO 2005)	22.7

ALS Life Sciences

Quality Control Summary Report

Sample Name	Method Blank
ALS Sample ID	WG3650694-1
Sample Size	1
Sample size units	sample
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	4-Nov-21
Target Analytes	**pg/g**
2,3,7,8-TCDD	<0.91
1,2,3,7,8-PeCDD	<0.80
1,2,3,4,7,8-HxCDD	<2.6
1,2,3,6,7,8-HxCDD	<1.6
1,2,3,7,8,9-HxCDD	<1.3
1,2,3,4,6,7,8-HpCDD	<5.4
OCDD	<8.6
2,3,7,8-TCDF	<0.72
1,2,3,7,8-PeCDF	1.26
2,3,4,7,8-PeCDF	<0.30
1,2,3,4,7,8-HxCDF	<1.9
1,2,3,6,7,8-HxCDF	<2.3
2,3,4,6,7,8-HxCDF	<2.0
1,2,3,7,8,9-HxCDF	<3.0
1,2,3,4,6,7,8-HpCDF	<1.2
1,2,3,4,7,8,9-HpCDF	<0.75
OCDF	<4.3
Extraction Standards	**% Rec**
13C12-2,3,7,8-TCDD	68
13C12-1,2,3,7,8-PeCDD	62
13C12-1,2,3,4,7,8-HxCDD	70
13C12-1,2,3,6,7,8-HxCDD	90
13C12-1,2,3,4,6,7,8-HpCDD	69
13C12-OCDD	68
13C12-2,3,7,8-TCDF	74
13C12-1,2,3,7,8-PeCDF	69
13C12-2,3,4,7,8-PeCDF	69
13C12-1,2,3,4,7,8-HxCDF	70
13C12-1,2,3,6,7,8-HxCDF	64
13C12-2,3,4,6,7,8-HxCDF	77
13C12-1,2,3,7,8,9-HxCDF	64
13C12-1,2,3,4,6,7,8-HpCDF	109
13C12-1,2,3,4,7,8,9-HpCDF	109
Homologue Group Totals	**pg/g**
Total-TCDD	<0.91
Total-PeCDD	<0.80
Total-HxCDD	<2.6
Total-HpCDD	<5.4
Total-TCDF	<0.72
Total-PeCDF	<0.30
Total-HxCDF	<3.0
Total-HpCDF	<1.2
Toxic Equivalency - (WHO 2005)	
Lower Bound PCDD/F TEQ (WHO 2005)	0.0378
Mid Point PCDD/F TEQ (WHO 2005)	1.75
Upper Bound PCDD/F TEQ (WHO 2005)	3.46

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	ORTECH
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L2651683		Mississauga, ON, L5J 2Y4
Date of Report	24-Nov-21		Canada
Date of Sample Receipt	15-Oct-21	**Client Contact:**	Chris Belore
		Client Project ID:	22085 Covanta

COMMENTS: **VOCs via SW846 Method 5041A/8260C**

Ketone data by VOST analyses are estimated values only

Certified by:

Steve Kennedy
Technical Supervisor

Results in this certificate relate only to the samples as submitted to the laboratory.
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ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		VOST PROOF	
ALS Sample ID	WG3664032-1		L2651683-13	
Sample units	sample		sample	
Matrix	QC		Media Prep	
Sampling Date	n/a		n/a	
Extraction Date	24-Nov-21		24-Nov-21	
Target Analytes	**ug/sample**		**ug/sample**	
Dichlorodifluoromethane	<0.02	U	<0.02	U
Vinyl Chloride	<0.02	U	<0.02	U
Bromomethane	<0.09	U	<0.09	U
Trichlorofluoromethane	<0.02	U	<0.02	U
1,1-Dichloroethene	<0.01	U	<0.01	U
Acetone	<0.1	U	<0.1	U
Methylene Chloride	<0.1	U	<0.1	U
trans,1,2-Dichloroethene	<0.01	U	<0.01	U
1,1-Dichloroethane	<0.01	U	<0.01	U
2-Butanone	<0.01	U	<0.01	U
Chloroform	<0.01	U	<0.01	U
1,1,1-Trichloroethane	<0.01	U	<0.01	U
Carbon Tetrachloride	<0.01	U	<0.01	U
Benzene	<0.05	U	<0.05	U
Trichloroethene	<0.01	U	<0.01	U
1,2-Dichloropropane	<0.01	U	<0.01	U
Bromodichloromethane	<0.01	U	<0.01	U
Toluene	<0.05	U	<0.05	U
Tetrachloroethene	<0.01	U	<0.01	U
Chlorodibromomethane	<0.01	U	<0.01	U
Ethylene Dibromide	<0.02	U	<0.02	U
Ethylbenzene	<0.01	U	<0.01	U
M&P-Xylene	<0.03	U	<0.03	U
O-Xylene	<0.01	U	<0.01	U
Styrene	<0.02	U	<0.02	U
Bromoform	<0.01	U	<0.01	U
Isopropylbenzene	<0.02	U	<0.02	U
1,3,5-Trimethylbenzene	<0.02	U	<0.02	U
1,3-Butadiene	<0.02	U	<0.02	U
Trichlorotrifluoroethane	<0.02	U	<0.02	U
Field Standard	**% Rec**		**% Rec**	
d10-Ethylbenzene(SPK)	113.7		95.8	
Surrogate Standards	**% Rec**		**% Rec**	
d4-1,2-Dichloroethane(SURR)	111		121	
d8-Toluene(SURR)	116.7		114.7	
4-Bromofluorobenzene(SURR)	106.9		105	
Internal Standards	**% Rec**		**% Rec**	
Bromochloromethane	103.2		97.9	
1,4-Difluorobenzene	78.4		74.4	
d5-Chlorobenzene	77.1		73.1	

U Indicates that this compound was not detected above the RL.

APPENDIX 21

ORTECH Equipment Calibration Data
(31 pages)

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22085	Date:	November 29, 2021
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - Quench Inlet	Test	1

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0	B1	1.002					
High	88.8	A2	88.95	B2		C				
Mid	53.31	A4	51.85	B4			53.4	D4	-2.9	E4
Low	30.9	A3	29.8	B3			31.0	D3	-3.7	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	29.8	29.9	-0.1

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	60		60
Run 2	60		60
Run 3	60		60
Average	**60**		**60**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22085	Date:	November 29, 2021
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - Quench Inlet	Test	2

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0	B1	1.002	C				
High	88.8	A2	88.95	B2						
Mid	53.31	A4	51.85	B4			53.4	D4	-2.9	E4
Low	30.9	A3	29.8	B3			31.0	D3	-3.7	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	29.9	30.4	-0.5

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	60		60
Run 2	60		60
Run 3	60		60
Average	**60**		**60**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22085	Date:	November 29, 2021
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - Quench Inlet	Test	3

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0	B1	1.002				
High	88.8	A2	88.95	B2	C				
Mid	53.31	A4	51.85	B4		53.4	D4	-2.9	E4
Low	30.9	A3	29.8	B3		31.0	D3	-3.7	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	30.4	29.3	1.1

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	60		60
Run 2	60		60
Run 3	60		60
Average	**60**		**60**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22085	Date:	November 29, 2021
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - APC OUTLET	Test	1

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0.05	B1	0.998					
High	88.8	A2	88.68	B2		C				
Mid	53.31	A4	54.08	B4			53.2	D4	1.6	E4
Low	30.9	A3	30.45	B3			30.8	D3	-1.3	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.05	0.3	-0.25
Mid	30.45	30.1	0.3

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	60		60
Run 2	60		60
Run 3	60		60
Average	**60**		**60**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22085	Date:	November 29, 2021
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - APC OUTLET	Test	2

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0.05	B1	0.998	C				
High	88.8	A2	88.68	B2						
Mid	53.31	A4	54.08	B4			53.2	D4	1.6	E4
Low	30.9	A3	30.45	B3			30.8	D3	-1.3	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.3	0.4	-0.1
Mid	30.1	29.6	0.5

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	60		60
Run 2	60		60
Run 3	60		60
Average	**60**		**60**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22085	Date:	November 29, 2021
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 1 - APC OUTLET	Test	3

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0.05	B1	0.998				
High	88.8	A2	88.68	B2	C				
Mid	53.31	A4	54.08	B4		53.2	D4	1.6	E4
Low	30.9	A3	30.45	B3		30.8	D3	-1.3	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.4	0.2	0.2
Mid	29.6	30.0	-0.4

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	60		60
Run 2	60		60
Run 3	60		60
Average	**60**		**60**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22085	Date:	November 29, 2021
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 2 - Quench INLET	Test	1

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0.03	B1	1.007	C				
High	88.82	A2	89.5	B2						
Mid	53.31	A4	51.78	B4			53.7	D4	-3.6	E4
Low	30.9	A3	30.52	B3			31.1	D3	-2.0	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	30.52	29.4	1.2

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	30		30
Run 2	30		30
Run 3	30		30
Average	**30**		**30**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22085	Date:	November 29, 2021
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 2 - Quench INLET	Test	2

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0.03	B1	1.007	C				
High	88.82	A2	89.5	B2						
Mid	53.31	A4	51.78	B4			53.7	D4	-3.6	E4
Low	30.9	A3	30.52	B3			31.1	D3	-2.0	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	29.35	29.8	-0.5

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	30		30
Run 2	30		30
Run 3	30		30
Average	**30**		**30**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22085	Date:	November 29, 2021
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 2 - Quench INLET	Test	3

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0.03	B1	1.007	C				
High	88.82	A2	89.5	B2						
Mid	53.31	A4	51.78	B4			53.7	D4	-3.6	E4
Low	30.9	A3	30.52	B3			31.1	D3	-2.0	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	29.83	29.1	0.8

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	30		30
Run 2	30		30
Run 3	30		30
Average	**30**		**30**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22085	Date:	November 29, 2021
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 2 - APC Outlet	Test	1

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0.05	B1	1.005					
High	88.82	A2	89.3	B2		C				
Mid	53.31	A4	51.25	B4			53.6	D4	-4.3	E4
Low	30.9	A3	30.7	B3			31.0	D3	-1.1	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.05	0.13	-0.08
Mid	30.7	29.4	1.3

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	30		30
Run 2	30		30
Run 3	30		30
Average	**30**		**30**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22085	Date:	November 29, 2021
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 2 - APC Outlet	Test	2

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0.05	B1	1.005	C				
High	88.82	A2	89.3	B2						
Mid	53.31	A4	51.25	B4			53.6	D4	-4.3	E4
Low	30.9	A3	30.7	B3			31.0	D3	-1.1	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.13	0	0.13
Mid	29.4	31.8	-2.4

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	30		30
Run 2	30		30
Run 3	30		30
Average	**30**		**30**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	22085	Date:	November 29, 2021
Company:	COVANTA	Operator:	J. Grollman
Location:	DYEC	Analyzer ID	VIG
Test Location:	Unit 2 - APC Outlet	Test	3

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0.05	B1	1.005	C				
High	88.82	A2	89.3	B2						
Mid	53.31	A4	51.25	B4			53.6	D4	-4.3	E4
Low	30.9	A3	30.7	B3			31.0	D3	-1.1	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0.05	-0.05
Mid	31.8	29.9	1.9

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	30		30
Run 2	30		30
Run 3	30		30
Average	**30**		**30**

ORTECH Consulting Inc.
Pitot Tube Calibration

Date	February 16, 2021
Probe/Pitot ID	S10
Mil Number	B03771
Calibrated Against	B02911
Cp standard	0.99777
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle (0.25")	7.61	0.140	0.195	0.847	0.0010
	9.75	0.230	0.320	0.847	0.0015
	12.03	0.350	0.495	0.840	0.0054
	14.23	0.490	0.690	0.842	0.0036
	16.27	0.640	0.880	0.852	0.0065
			Mean	0.846	0.0036
Without Nozzle	7.74	0.145	0.205	0.841	0.0014
	9.54	0.220	0.310	0.842	0.0000
	12.03	0.350	0.490	0.845	0.0027
	13.79	0.460	0.650	0.841	0.0012
	15.88	0.610	0.860	0.842	0.0002
			Mean	0.842	0.0011

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the Ontario Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Consulting Inc.
Pitot Tube Calibration

Date	February 17, 2021
Probe/Pitot ID	15E
MII Number	COE 20113
Calibrated Against	B02911
Cp standard	0.99777
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	7.88	0.150	0.210	0.845	0.0005
(0.25")	9.65	0.225	0.320	0.838	0.0061
	12.29	0.365	0.510	0.846	0.0013
	14.38	0.500	0.690	0.851	0.0066
	16.52	0.660	0.930	0.842	0.0022
			Mean	0.844	0.0034

Without Nozzle	7.88	0.150	0.210	0.845	0.0006
	9.86	0.235	0.330	0.843	0.0019
	12.12	0.355	0.500	0.842	0.0032
	13.64	0.450	0.630	0.845	0.0006
	15.88	0.610	0.840	0.852	0.0064
			Mean	0.845	0.0025

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the Ontario Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Consulting Inc.
Pitot Tube Calibration

Date	February 17, 2021
Probe/Pitot ID	SP2
MII Number	B04009
Calibrated Against	B02911
Cp standard	0.99777
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	7.88	0.150	0.210	0.845	0.0011
(0.25")	9.96	0.240	0.340	0.840	0.0039
	12.20	0.360	0.510	0.840	0.0039
	14.23	0.490	0.680	0.848	0.0048
	16.14	0.630	0.880	0.846	0.0020
			Mean	0.844	0.0031
Without Nozzle	8.01	0.155	0.220	0.839	0.0039
	9.96	0.240	0.335	0.846	0.0032
	12.12	0.355	0.500	0.842	0.0006
	14.09	0.480	0.670	0.846	0.0032
	16.14	0.630	0.890	0.841	0.0019
			Mean	0.843	0.0025

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the MOE Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Consulting Inc.
Pitot Tube Calibration

Date	February 17, 2021
Probe/Pitot ID	SP4
MII Number	B04011
Calibrated Against	B02911
Cp standard	0.99777
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	8.01	0.155	0.215	0.849	0.0065
(0.25")	9.96	0.240	0.340	0.840	0.0024
	11.68	0.330	0.470	0.837	0.0046
	14.38	0.500	0.700	0.845	0.0026
	16.39	0.650	0.920	0.840	0.0020
			Mean	0.842	0.0036

Without Nozzle	7.88	0.150	0.210	0.845	0.0011
	9.96	0.240	0.340	0.840	0.0061
	12.37	0.370	0.520	0.843	0.0027
	14.09	0.480	0.660	0.852	0.0066
	16.20	0.635	0.880	0.849	0.0032
			Mean	0.846	0.0039

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the Ontario Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Consulting Inc.
Pitot Tube Calibration

Date	February 17, 2021
Probe/Pitot ID	S7A
MII Number	COE20112
Calibrated Against	B02911
Cp standard	0.99777
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	7.88	0.150	0.210	0.845	0.0030
(0.25")	10.37	0.260	0.360	0.849	0.0017
	12.03	0.350	0.490	0.845	0.0030
	13.79	0.460	0.630	0.854	0.0063
	16.14	0.630	0.880	0.846	0.0020
			Mean	0.848	0.0032
Without Nozzle	7.88	0.150	0.210	0.845	0.0013
	9.96	0.240	0.330	0.852	0.0064
	11.86	0.340	0.475	0.846	0.0004
	14.09	0.480	0.680	0.840	0.0063
	16.27	0.640	0.890	0.848	0.0016
			Mean	0.846	0.0032

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the Ontario Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Consulting Inc.
Pitot Tube Calibration

Date	February 17, 2021
Probe/Pitot ID	PM 10 2.5
MII Number	COE 20132
Calibrated Against	B02911
Cp standard	0.99777
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Consulting Inc.
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Nozzle Size inches	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
NA	7.88	0.150	0.210	0.845	0.0007
	9.75	0.230	0.320	0.847	0.0019
	12.20	0.360	0.500	0.848	0.0026
	13.79	0.460	0.640	0.847	0.0019
	15.75	0.600	0.850	0.840	0.0057
			Mean	0.845	0.0026

Note: Pitots must always be used in the orientation that they are calibrated in.

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the Ontario Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH

Dry Gas Meter Calibration Using Calibrated Critical Orifice

Meter Console Information	
Meter Number	Team 1
Meter MII Number	COE 20094
Orifice Set ID	COE20999
Barometer ID	COE 20028

Calibration Conditions		
Barometric Pressure	29.41	in Hg
Theoretical Critical Vacuum	13.9	in Hg
System Leak Check	>0.001 cfm @ 24" Hg	
Calibration Date	August 12, 2021	
Calibration Technician	Jake Artibello	
Reviewed and Accepted By		

Factors/Conversions		
Std Temp	528	°R
Std Press	29.92	in Hg
K_1	17.647	oR/in Hg

Calibration Data										
Run Time	Metering Console					Critical Orifice				
Elapsed	DGM Orifice DH	Volume Initial	Volume Final	Avg. DGM Temp Initial	Avg. DGM Temp Final	Serial Number	Coefficient	Amb Temp Initial	Amb Temp Final	Actual Vacuum
(Q)	(P_m)	(V_{mi})	(V_{mf})	(t_{mi})	(t_{mf})		K'	(t_{amb})	(t_{amb})	
min	in H_2O	cubic feet	cubic feet	°F	°F			°F	°F	in Hg
11.0	0.25	334.978	338.345	77.0	76.0	UR-40	0.2352	75.2	75.2	21.0
10.0	0.56	338.345	342.683	76.0	76.0	UR-48	0.3308	75.2	75.2	20.0
10.0	1.10	342.683	348.603	76.0	76.0	UR-55	0.4520	75.2	75.2	19.0
10.0	2.00	348.603	356.308	76.0	76.0	UR-63	0.5874	75.2	75.2	17.0
10.0	3.70	356.308	366.894	76.0	76.0	UR-73	0.8107	75.2	75.2	14.0

Results								
Standardized Data				Dry Gas Meter				
				Calibration Factor		Flowrate	DH @	
Dry Gas Meter		Critical Orifice		Value	Variation	Std & Corr	0.75 SCFM	Variation
($V_{m(std)}$)	($Q_{m(std)}$)	($Vcr_{(std)}$)	($Q_{cr(std)}$)	(Y)	(DY)	($Q_{m(std)(corr)}$)	(DH@)	(DDH@)
cubic feet	cfm	cubic feet	cfm			cfm	in H2O	
3.259	0.296	3.289	0.299	1.009	0.009	0.299	1.573	-0.238
4.206	0.421	4.205	0.421	1.000	0.000	0.421	1.781	-0.030
5.748	0.575	5.746	0.575	1.000	0.000	0.575	1.874	0.063
7.498	0.750	7.467	0.747	0.996	-0.004	0.747	2.017	0.206
10.345	1.035	10.306	1.031	0.996	-0.004	1.031	1.959	0.148
			DGMCF	1.000			1.811	DH@ Average

Individual values of DGM calibration factor (Y) must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value (Y) must be 1.00 ± 0.05,
otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

ORTECH

Manometer Calibration Data

Date	April 7, 2020	Calibrated By	Jake Artibello
Manometer Number	Team 1	Signature	
Manometer MII Number	COE 20094	Reviewed/Accepted By	
Calibrated Against	Dual 3		
MII Number	COE 20008		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale "H_2O	Manometer Reading "H_2O		Reference Manometer Reading "H_2O	Percent Difference %
	Before Adjustment	After Adjustment		
	0.300	NA	0.310	3.2
0-1.0	0.520		0.540	3.7
	0.776		0.770	-0.8
	2.50		2.51	0.4
1.0-10.0	4.60		4.64	0.9
	6.54		6.56	0.3

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer} - \text{Instrument Reading})}{\text{Ref. Manometer}} \times 100$$

Acceptance Criteria:
The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H_2O on the 0 to 1 inch scale, and 0.05 "H_2O on the 1 to 10 inch scales.
(Environment Canada Reference Method 1/RM/8, Section 2)

ORTECH
Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	Omega DP118
MII	COE 20094
Date	August 12, 2021
Calibrated By	Jake Artibello
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°F)	Tredicator Display Value		Percent Difference
	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	32	N/A	0.0
70	69		1.4
100	99		1.0
200	201		-0.5
250	252		-0.8
300	301		-0.3
400	400		0.0
500	500		0.0
600	600		0.0
700	700		0.0
800	800		0.0
900	900		0.0
1000	1000		0.0
1100	1101		-0.1
1200	1200		0.0
1250	1250		0.0

$$\% \text{ Difference} = \frac{(\text{calibrator} - \text{after adjustment reading})}{\text{calibrator}} \times 100$$

Acceptance Criteria:

'Trendicator display must read within ± 1.5%, and ± 3 degrees F of the standard value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use.

(Ontario Source Testing Code, June 2010, Part C: Method ON-2, 7.5 Appendix 2E)

ORTECH

Dry Gas Meter Calibration Using Calibrated Critical Orifice

Meter Console Information	
Meter Number	Team # 3
Meter MII Number	COE 20093
Orifice Set ID	COE20999
Barometer ID	COE 20028

Calibration Conditions		
Barometric Pressure	29.71	in Hg
Theoretical Critical Vacuum	14.0	in Hg
System Leak Check	<.001@25 " Hg	
Calibration Date	Aug. 16, 2021	
Calibration Technician	Jake Dunlop	
Reviewed and Accepted By		

Factors/Conversions		
Std Temp	528	°R
Std Press	29.92	in Hg
K_1	17.647	oR/in Hg

Calibration Data										
Run Time	Metering Console					Critical Orifice				
Elapsed	DGM Orifice DH	Volume Initial	Volume Final	Avg. DGM Temp Initial	Avg. DGM Temp Final	Serial Number	Coefficient	Amb Temp Initial	Amb Temp Final	Actual Vacuum
(Q)	(P_m)	(V_{mi})	(V_{mf})	(t_{mi})	(t_{mf})		K'	(t_{amb})	(t_{amb})	
min	in H_2O	cubic feet	cubic feet	°F	°F			°F	°F	in Hg
10.0	0.32	150.056	153.145	78.5	78.5	UR-40	0.2352	75.2	75.2	22.0
10.0	0.69	159.113	163.476	78.0	78.5	UR-48	0.3308	75.2	75.2	20.0
10.0	1.30	153.145	159.129	78.5	78.5	UR-55	0.4520	75.2	75.2	18.7
10.0	2.22	131.641	139.462	77.5	78.0	UR-63	0.5874	75.2	75.2	17.0
10.0	3.95	139.462	150.056	77.5	80.0	UR-73	0.8107	75.2	75.2	14.0

Results								
Standardized Data				Dry Gas Meter				
				Calibration Factor		Flowrate	DH @	
Dry Gas Meter		Critical Orifice		Value	Variation	Std & Corr	0.75 SCFM	Variation
($V_{m(std)}$)	($Q_{m(std)}$)	($Vcr_{(std)}$)	($Q_{cr(std)}$)	(Y)	(DY)	($Q_{m(std)(corr)}$)	(DH@)	(DDH@)
cubic feet	cfm	cubic feet	cfm			cfm	in H2O	
3.010	0.301	3.021	0.302	1.004	0.008	0.302	1.973	-0.149
4.257	0.426	4.248	0.425	0.998	0.002	0.425	2.151	0.029
5.845	0.584	5.805	0.580	0.993	-0.003	0.580	2.170	0.048
7.667	0.767	7.544	0.754	0.984	-0.012	0.754	2.194	0.072
10.411	1.041	10.411	1.041	1.000	0.004	1.041	2.050	-0.072
			DGMCF	0.996			2.122	DH@ Average

Individual values of DGM calibration factor (Y) must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value (Y) must be 1.00 ± 0.05,
otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

ORTECH

Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	Omega DP116
MII	A12007
Date	Aug 16, 2021
Calibrated By	Jake Dunlop
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°F)	Tredicator Display Value		Percent Difference
	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	32	NA	0.0
70	69		1.4
100	99		1.0
200	200		0.0
250	250		0.0
300	300		0.0
400	399		0.3
500	498		0.4
600	599		0.2
700	700		0.0
800	799		0.1
900	899		0.1
1000	1000		0.0
1100	1100		0.0
1200	1200		0.0
1250	1249		0.1

$$\% \text{ Difference} = \frac{(\text{calibrator} - \text{after adjustment reading})}{\text{calibrator}} \times 100$$

Acceptance Criteria:

'Trendicator display must read within ± 1.5%, and ± 3 degrees F of the standard value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use.

(Ontario Source Testing Code, June 2010, Part C: Method ON-2, 7.5 Appendix 2E)

ORTECH Environmental
Manometer Calibration Data

Date	8/16/2021	Calibrated By	Jake Dunlop
Manometer Number	Team 3	Signature	
Manometer MII Numbe	COE 20093	Reviewed/Accepted By	
Calibrated Against	Omega HHP		
MII Number	B02679		
Calibration Procedure	03 - J010		

Back Leg

Manometer Scale "H_20	Manometer Reading "H_2O		Reference Manometer Reading "H_2O	Percent Difference %
	Before Adjustment	After Adjustment		
	0.250	NA	0.250	0.0
0-1.0	0.555		0.560	0.9
	0.735		0.750	2.0
	2.61		2.58	-1.2
1.0-10.0	4.10		4.05	-1.2
	6.60		6.63	0.5

Percent Difference = (Ref. Manometer - Instrument Reading) x 100
Ref. Manometer

Acceptance Criteria:
The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H_2O on the 0 to 1 inch scale, and 0.05 "H_2O on the 1 to 10 inch scales.
(Environment Canada Reference Method 1/RM/8, Section 2)

ORTECH

Dry Gas Meter Calibration Using Calibrated Critical Orifice

Meter Console Information	
Meter Number	Team 4
Meter MII Number	COE 20090
Orifice Set ID	COE20999
Barometer ID	COE 20028

Calibration Conditions		
Barometric Pressure	29.71	in Hg
Theoretical Critical Vacuum	14.0	in Hg
System Leak Check	<.001 @ 26"	
Calibration Date	Aug 16,2021	
Calibration Technician	Blair McIntyre	
Reviewed and Accepted By		

Factors/Conversions		
Std Temp	528	°R
Std Press	29.92	in Hg
K_1	17.647	oR/in Hg

Calibration Data										
Run Time	Metering Console					Critical Orifice				
Elapsed	DGM Orifice DH	Volume Initial	Volume Final	Avg. DGM Temp Initial	Avg. DGM Temp Final	Serial Number	Coefficient	Amb Temp Initial	Amb Temp Final	Actual Vacuum
(Q)	(P_m)	(V_{mi})	(V_{mf})	(t_{mi})	(t_{mf})		K'	(t_{amb})	(t_{amb})	
min	in H_2O	cubic feet	cubic feet	°F	°F			°F	°F	in Hg
10.0	0.29	552.546	555.536	77.0	75.5	UR-40	0.2352	75.2	75.2	23.2
10.0	0.59	524.673	528.874	73.5	74.0	UR-48	0.3308	75.2	75.2	22.5
10.0	1.15	528.874	534.666	74.0	74.5	UR-55	0.4520	75.2	75.2	20.9
10.0	1.95	555.536	563.079	75.5	76.5	UR-63	0.5874	75.2	75.2	19.2
10.0	3.65	542.291	552.546	76.8	78.0	UR-73	0.8107	75.2	75.2	16.0

Results								
Standardized Data				Dry Gas Meter				
				Calibration Factor		Flowrate	DH @	
Dry Gas Meter		Critical Orifice		Value	Variation	Std & Corr	0.75 SCFM	Variation
($V_{m(std)}$)	($Q_{m(std)}$)	($Vcr_{(std)}$)	($Q_{cr(std)}$)	(Y)	(DY)	($Q_{m(std)(corr)}$)	(DH@)	(DDH@)
cubic feet	cfm	cubic feet	cfm			cfm	in H2O	
2.925	0.293	3.021	0.302	1.033	0.007	0.302	1.757	-0.104
4.133	0.413	4.248	0.425	1.028	0.002	0.425	1.839	-0.022
5.700	0.570	5.805	0.580	1.018	-0.007	0.580	1.920	0.059
7.414	0.741	7.544	0.754	1.017	-0.008	0.754	1.928	0.067
10.096	1.010	10.411	1.041	1.031	0.006	1.041	1.894	0.033
			DGMCF	1.026			1.861	DH@ Average

Individual values of DGM calibration factor (Y) must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value (Y) must be 1.00 ± 0.05,
otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

ORTECH
Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	Omega DP118
MII	COE 20094
Date	Aug 16, 2021
Calibrated By	Blair McIntyre
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°F)	Tredicator Display Value		Percent Difference
	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	32	NA	0.0
70	69		1.4
100	99		1.0
200	200		0.0
250	251		-0.4
300	300		0.0
400	399		0.3
500	498		0.4
600	599		0.2
700	700		0.0
800	800		0.0
900	900		0.0
1000	1000		0.0
1100	1100		0.0
1200	1200		0.0
1250	1250		0.0

$$\% \text{ Difference} = \frac{(\text{calibrator} - \text{after adjustment reading})}{\text{calibrator}} \times 100$$

Acceptance Criteria:

'Trendicator display must read within ± 1.5%, and ± 3 degrees F of the standard value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use.

(Ontario Source Testing Code, June 2010, Part C: Method ON-2, 7.5 Appendix 2E)

ORTECH

Manometer Calibration Data

Date	August 16, 2021	Calibrated By	Blair McIntyre
Manometer Number	Team 4	Signature	
Manometer MII Number	COE 20094	Reviewed/Accepted By	
Calibrated Against	Dual 3		
MII Number	COE 20008		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale "H_2O	Manometer Reading "H_2O		Reference Manometer Reading "H_2O	Percent Difference %
	Before Adjustment	After Adjustment		
	0.260	NA	0.250	-4.0
0-1.0	0.500		0.490	-2.0
	0.750		0.730	-2.7
	2.60		2.60	0.0
1.0-10.0	5.10		5.11	0.2
	7.90		7.93	0.4

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer} - \text{Instrument Reading})}{\text{Ref. Manometer}} \times 100$$

Acceptance Criteria:
The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H_2O on the 0 to 1 inch scale, and 0.05 "H_2O on the 1 to 10 inch scales.
(Environment Canada Reference Method 1/RM/8, Section 2)

ORTECH

Dry Gas Meter Calibration Data

Calibration Procedure	03-J004
Meter Number	Vost 3
Date	November 23, 2021
Barometric Pressure	29.71
System Leak Check	NDL @ 20 " Hg

MII NUMBERS	
DGM	A12010
Gasometer	A01463
Barometer	COE 20028

Calibrated By	J. Grollman
Signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{\text{Vstd } ft^3}{\text{Vdgm } ft^3} \quad \frac{\text{Tdgm } °F+460}{\text{Tstd } °F+460} \quad \frac{\text{Pbar (in. Hg)}}{\text{(Pbar in. Hg+DGMPressure/13.6)}}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading L		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration	Time	Flow Rate
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°C	in. H_2O	°C	Factor	min.	lpm
54.40	45.30	9.10	0.428	21.0	6386.20	6398.80	0.445	32.0	0.5	31.0	0.997	23	0.5
67.90	61.60	6.30	0.296	21.0	6367.620	6376.300	0.307	30.0	0.5	30.0	0.995	16	0.5
61.60	54.40	7.20	0.339	21.0	6376.300	6386.200	0.350	31.0	0.5	30.0	1.000	18	0.5

Acceptance Criteria:

Individual values of DGM calibration factor must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value must be 1.00 ± 0.05,
otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

DGMCF AVERAGE

0.5Lpm	0.997

Revision June 5, 2007

ORTECH
Trendicator Calibration

Calibration Procedure	**03-J005**
Trendicator Type	**Nutech**
MII	**A12010**
Date	**November 23, 2021**
Calibrated By	**J. Grollman**
Signature	
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°C)	**Tredicator Display Value**		**Percent Difference**
	Before Adjustment (°C)	**After Adjustment (°C)**	**(%)**
0	0	NA	0.0
20	20		0.0
50	50		0.0
100	100		0.0
150	151		-0.7
200	200		0.0
300	300		0.0
400	400		0.0
500	500		0.0
600	600		0.0

$$\% \text{ Difference} = \frac{(\text{micromite} - \text{after adjustment reading}) \times 100}{\text{micromite}}$$

Acceptance Criteria:
Trendicator display must read within ± 1.5% of the micromite value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use. (MOE Source Testing Code, Version #2, Method 5)

ORTECH Environmental

Dry Gas Meter Calibration Data

Calibration Procedure	**03-J004**
Meter Number	**M05498**
Date	**November 23, 2021**
Barometric Pressure	**29.74**
System Leak Check	**NDL @ 21"Hg**

MII NUMBERS	
DGM	**M05498**
Gasometer	**A01463**
Barometer	**COE 20028**

Calibrated By	**J. Grollman**
Signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

DGMCF= $\frac{\text{Vstd } ft^3}{\text{Vdgm } ft^3}$ $\frac{\text{Tdgm } ^\circ F+460}{\text{Tstd } ^\circ F+460}$ $\frac{\text{Pbar ("Hg)}}{\text{(Pbar "Hg+DGMPressure/13.6)}}$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading L		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration	Time	Flow Rate
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°C	in. H_2O	°C	Factor	min.	lpm
73.10	50.00	23.10	1.087	21.0	6878.42	6907.70	1.034	23.0	1.0	21.0	1.055	55	0.5
65.90	57.70	8.20	0.386	21.0	6848.97	6859.55	0.374	26.0	1.0	25.0	1.047	19	0.6
57.70	43.20	14.50	0.682	21.0	6859.55	6878.42	0.666	27.0	1.0	26.0	1.042	34	0.6

Acceptance Criteria:

Individual values of DGM calibration factor must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value must be 1.00 ± 0.05, otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

DGMCF AVERAGE

0.5 Lpm	1.048

Revision June 5, 2007

ORTECH Environmental
Trendicator Calibration

Calibration Procedure	**03-J005**
Trendicator Type	**Nutech**
MII	**M05498**
Date	**November 23, 2021**
Calibrated By	**J. Grollman**
Signature	
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°C)	**Tredicator Display Value**		**Percent Difference**
	Before Adjustment (°C)	**After Adjustment (°C)**	**(%)**
0	1	0	0.0
10		10	0.0
20		20	0.0
50		50	0.0
75		75	0.0
100		101	-1.0
125		126	-0.8
150		151	-0.7
200		200	0.0
300		300	0.0
400		400	0.0
500		500	0.0
600		600	0.0

$$\% \text{ Difference} = \frac{(\text{micromite} - \text{after adjustment reading}) \times 100}{\text{micromite}}$$

Acceptance Criteria:
Trendicator display must read within ± 1.5% of the micromite value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use. (MOE Source Testing Code, Version #2, Method 5)

APPENDIX 22

Particulate and Metals Test Emission Calculations
(24 pages)

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	1 - Particulate & Metals
Date:	November 29, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT		0.848
DGM CORRECTION FACTOR		1.026
NOZZLE DIAMETER		6.43 mm
DRY REF GAS VOLUME SAMPLED		3.764 m^3
AVGERGE ISOKINETICITY		100.5 %
STACK DIAMETER		1.37 m
LENGTH		0.00 m
WIDTH		0.00 m
AREA OF STACK or DUCT		1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE		140.4 °C
AVERAGE GAS MOISTURE BY VOLUME		14.1 %
AVERAGE GAS VELOCITY		17.79 m/s
BAROMETRIC PRESSURE (Station)		100.677 Kpa
STATIC PRESSURE		-2.689 Kpa
ABSOLUTE GAS PRESSURE		97.988 Kpa
OXYGEN CONCENTRATION		8.8 %
CARBON DIOXIDE CONCENTRATION		10.72 %
CARBON MONOXIDE CONCENTRATION		7.0 ppm

FLOWRATE

ACTUAL GAS FLOWRATE		26.28 m^3/s
DRY REF GAS FLOWRATE		15.75 Rm^3/s
DRY ADJ GAS FLOWRATE		19.25 Rm^3/s
WET REF GAS FLOWRATE		18.33 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0.5 mg
	-FILTER	0.9 mg
	-TOTAL	1.4 mg
DRY REF GAS VOLUME SAMPLED		3.764 m^3
PARTICULATE CONC. - ACTUAL		0.223 mg/m^3
PARTICULATE CONC. - DRY REF		0.372 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.304 mg/m^3
PARTICULATE CONC. - WET REF		0.320 mg/m^3
PARTICULATE EMISSION RATE		0.005857 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	November 29, 2021	**Operator:**	RW

Pitot Factor	0.848	**Filter (mg)**	0.9		
DGMCF	1.026	**Probe (mg)**	0.5		
Barometric Pressure	29.73 "Hg	**CWTR (g)**	427.3		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	25.3		
Nozzle	0.2533 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.56 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.8
CO2%	10.72
COppm	7.0

Measured H2O
14.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	57.97	0.62	286	56	82	82	1.7	5.0		16.53	
	2.5	59.85	0.85	284	54	82	86	2.2	6.0		19.33	112.0
	5	61.94	0.85	284	50	82	87	2.2	6.0		19.33	**105.9**
2	7.5	64.05	0.85	284	49	82	88	2.2	6.0		19.33	**106.9**
	10	66.11	0.86	284	49	82	89	2.1	6.0		19.44	**104.2**
	12.5	68.13	0.86	284	50	83	90	2	6.0		19.44	**101.5**
3	15	70.10	0.86	284	50	83	91	1.9	6.0		19.44	**98.8**
	17.5	71.99	0.79	284	51	83	92	1.9	6.0		18.63	**94.7**
	20	73.99	0.79	284	51	83	92	1.9	6.0		18.63	**104.4**
4	22.5	75.98	0.75	284	52	84	93	1.7	6.0		18.15	**103.9**
	25	77.72	0.75	284	52	84	94	1.7	6.0		18.15	**93.0**
	27.5	79.44	0.74	284	51	85	94	1.7	6.0		18.03	**91.9**
5	30	81.26	0.67	284	51	85	95	1.5	5.5		17.16	**97.8**
	32.5	82.88	0.66	284	50	85	95	1.5	5.5		17.03	**91.3**
	35	84.45	0.66	283	51	86	96	1.5	5.5		17.02	89.2
6	37.5	86.16	0.6	283	51	86	96	1.4	5.5		16.23	**96.9**
	40	87.81	0.59	283	51	86	96	1.4	5.5		16.09	**98.0**
	42.5	89.46	0.59	283	51	87	96	1.4	5.5		16.09	**98.9**
7	45	91.12	0.66	283	50	87	97	1.5	5.5		17.02	**99.4**
	47.5	92.88	0.65	283	50	87	97	1.5	5.5		16.89	**99.5**
	50	94.64	0.65	283	50	87	97	1.5	5.5		16.89	**100.3**
8	52.5	96.41	0.7	283	50	87	97	1.6	5.5		17.53	**100.9**
	55	98.20	0.7	283	50	88	97	1.6	5.5		17.53	**98.3**
	57.5	100.00	0.68	283	50	88	97	1.6	5.5		17.27	**98.8**
9	60	101.80	0.68	283	50	88	97	1.6	5.5		17.27	**100.2**
	62.5	103.60	0.68	282	50	88	97	1.6	5.5		17.26	**100.2**
	65	105.40	0.68	282	50	88	97	1.6	5.5		17.26	**100.2**
10	67.5	107.18	0.68	282	49	88	98	1.6	5.5		17.26	**99.1**
	70	108.98	0.68	282	49	88	98	1.6	5.5		17.26	**100.1**
	72.5	110.77	0.68	282	50	89	98	1.6	5.5		17.26	**99.5**
11	75	112.57	0.68	282	50	89	98	1.6	5.5		17.26	**100.0**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	November 29, 2021	**Operator:**	RW

Pitot Factor	0.848	**Filter (mg)**	0.9		
DGMCF	1.026	**Probe (mg)**	0.5		
Barometric Pressure	29.73 "Hg	**CWTR (g)**	427.3		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	25.3		
Nozzle	0.2533 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.56 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.8
CO2%	10.72
COppm	7.0

Measured H2O
14.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
	77.5	114.27	0.68	282	50	89	98	1.6	5.5		17.26	**94.4**
	80	116.17	0.68	282	50	89	98	1.6	5.5		17.26	**105.5**
12	82.5	117.98	0.4	282	50	89	98	1	5.0		13.24	**100.5**
	85	119.42	0.4	282	50	89	98	1	5.0		13.24	**104.1**
	87.5	120.80	0.41	282	51	89	98	1	5.0		13.40	**99.8**
	90	122.18								0.56		**98.6**
1	0	122.74	0.85	282	53	88	93	2.1	6.0		19.30	
	2.5	124.76	0.85	285	47	88	94	2.1	6.0		19.34	**101.0**
	5	126.80	0.85	285	45	88	94	2.1	6.0		19.34	**102.1**
2	7.5	128.83	0.85	286	44	88	95	2.1	6.0		19.35	**101.6**
	10	130.89	0.85	286	44	88	95	2.1	6.0		19.35	**103.1**
	12.5	132.88	0.85	286	44	88	96	2.1	6.0		19.35	**99.6**
3	15	134.90	0.85	285	44	89	96	2.1	6.0		19.34	**101.0**
	17.5	136.92	0.85	285	44	89	97	2.1	6.0		19.34	**100.9**
	20	138.92	0.82	286	44	89	97	2	6.0		19.01	**99.8**
4	22.5	140.92	0.8	286	44	89	97	2	6.0		18.77	**101.6**
	25	142.93	0.75	286	42	89	97	1.8	6.0		18.18	**103.4**
	27.5	144.84	0.75	285	44	89	98	1.8	6.0		18.16	**101.4**
5	30	146.73	0.72	286	45	89	98	1.7	6.0		17.81	**100.2**
	32.5	148.62	0.72	286	45	89	98	1.7	6.0		17.81	**102.3**
	35	150.37	0.72	286	45	90	98	1.7	6.0		17.81	**94.7**
6	37.5	152.20	0.65	286	45	90	98	1.6	6.0		16.92	**99.0**
	40	153.97	0.66	286	45	90	98	1.6	6.0		17.05	**100.7**
	42.5	155.74	0.66	286	45	90	98	1.6	6.0		17.05	**100.0**
7	45	157.51	0.75	287	45	90	98	2	6.0		18.19	**100.0**
	47.5	159.60	0.75	287	45	90	98	1.9	6.0		18.19	110.9
	50	161.47	0.75	287	45	90	98	1.9	6.0		18.19	**99.2**
8	52.5	163.42	0.75	287	46	90	98	1.9	6.0		18.19	**103.5**
	55	165.37	0.75	287	46	90	98	1.9	6.0		18.19	**103.5**
	57.5	167.33	0.75	287	46	90	98	1.9	6.0		18.19	**104.0**
9	60	169.28	0.78	287	46	90	98	1.9	6.0		18.55	**103.5**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	November 29, 2021	**Operator:**	RW

Pitot Factor	0.848	**Filter (mg)**	0.9		
DGMCF	1.026	**Probe (mg)**	0.5		
Barometric Pressure	29.73 "Hg	**CWTR (g)**	427.3		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	25.3		
Nozzle	0.2533 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.56 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.8
CO2%	10.72
COppm	7.0

Measured H2O
14.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	62.5	171.23	0.79	287	46	90	98	1.9	6.0		18.67	**101.5**
	65	173.18	0.78	287	46	90	98	1.9	6.0		18.55	**100.8**
10	67.5	175.15	0.78	287	46	90	98	1.9	6.0		18.55	**102.5**
	70	177.08	0.78	287	46	90	98	1.9	6.0		18.55	**100.4**
	72.5	179.03	0.78	287	46	90	98	1.9	6.0		18.55	**101.5**
11	75	180.98	0.72	287	47	90	98	1.8	6.0		17.82	**101.5**
	77.5	182.87	0.72	287	47	90	98	1.7	6.0		17.82	**102.3**
	80	184.72	0.72	287	47	90	98	1.7	6.0		17.82	**100.1**
12	82.5	186.66	0.65	287	47	90	98	1.5	6.0		16.93	**105.0**
	85	188.41	0.67	287	48	90	98	1.5	6.0		17.19	**99.6**
	87.5	190.10	0.65	287	47	90	98	1.5	6.0		16.93	**94.8**
	90	191.86										**100.2**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	2 - Particulate & Metals
Date:	November 29, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.026
NOZZLE DIAMETER	6.43 mm
DRY REF GAS VOLUME SAMPLED	3.831 m^3
AVGERGE ISOKINETICITY	100.1 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	143.2 °C
AVERAGE GAS MOISTURE BY VOLUME	15.1 %
AVERAGE GAS VELOCITY	18.55 m/s
BAROMETRIC PRESSURE (Station)	100.610 Kpa
STATIC PRESSURE	-2.689 Kpa
ABSOLUTE GAS PRESSURE	97.920 Kpa
OXYGEN CONCENTRATION	8.9 %
CARBON DIOXIDE CONCENTRATION	10.46 %
CARBON MONOXIDE CONCENTRATION	9.0 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.40 m^3/s
DRY REF GAS FLOWRATE	16.10 Rm^3/s
DRY ADJ GAS FLOWRATE	19.52 Rm^3/s
WET REF GAS FLOWRATE	18.97 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	3.4 mg
	-FILTER	0.2 mg
	-TOTAL	3.6 mg
DRY REF GAS VOLUME SAMPLED		3.831 m^3
PARTICULATE CONC. - ACTUAL		0.552 mg/m^3
PARTICULATE CONC. - DRY REF		0.940 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.775 mg/m^3
PARTICULATE CONC. - WET REF		0.798 mg/m^3
PARTICULATE EMISSION RATE		0.015131 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	November 29, 2021	**Operator:**	RW

Pitot Factor	0.848	**Filter (mg)**	0.2		
DGMCF	1.026	**Probe (mg)**	3.4		
Barometric Pressure	29.71 "Hg	**CWTR (g)**	476.4		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	24		
Nozzle	0.2533 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.93 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.9
CO2%	10.46
COppm	9.0

Measured H2O
15.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	92.30	0.89	286	50	86	88	2.1	6.0		19.86	
	2.5	94.33	0.89	287	50	87	91	2.1	6.0		19.88	**101.0**
	5	96.37	0.89	288	50	87	91	2.1	6.0		19.89	**101.2**
2	7.5	98.40	0.9	288	50	87	93	2.1	6.0		20.00	**100.8**
	10	100.42	0.9	288	50	87	94	2.1	6.0		20.00	**99.6**
	12.5	102.45	0.9	288	50	88	95	2.1	6.0		20.00	**100.0**
3	15	104.58	0.9	288	50	88	95	2.1	6.0		20.00	**104.7**
	17.5	106.50	0.9	288	49	88	96	2.1	6.0		20.00	**94.4**
	20	108.52	0.9	289	49	88	96	2.1	6.0		20.01	**99.2**
4	22.5	110.54	0.82	289	48	89	96	2	6.0		19.10	**99.3**
	25	112.52	0.85	288	48	89	97	2	6.0		19.44	**101.8**
	27.5	114.51	0.82	288	48	89	98	2	6.0		19.09	**100.3**
5	30	116.48	0.78	289	48	89	98	1.9	6.0		18.63	**101.0**
	32.5	118.41	0.8	289	48	89	98	1.9	6.0		18.87	**101.5**
	35	120.34	0.81	289	48	89	98	1.9	6.0		18.99	**100.3**
6	37.5	122.25	0.75	289	48	89	98	1.6	5.5		18.27	**98.6**
	40	124.06	0.75	290	49	90	99	1.6	5.5		18.28	**97.0**
	42.5	125.88	0.72	290	49	90	99	1.6	5.5		17.91	**97.5**
7	45	127.72	0.78	289	49	90	99	1.7	5.5		18.63	**100.6**
	47.5	129.59	0.78	290	50	90	99	1.7	5.5		18.64	**98.2**
	50	131.47	0.78	290	50	90	99	1.7	5.5		18.64	**98.8**
8	52.5	133.34	0.8	290	50	90	99	1.8	5.5		18.88	**98.2**
	55	135.28	0.81	289	50	90	99	1.8	5.5		18.99	**100.6**
	57.5	137.21	0.81	289	50	90	99	1.8	5.5		18.99	**99.4**
9	60	139.14	0.85	290	50	90	99	1.9	6.0		19.46	**99.4**
	62.5	141.13	0.85	290	50	91	99	1.9	6.0		19.46	**100.2**
	65	143.11	0.84	290	51	91	99	1.9	6.0		19.35	**99.6**
10	67.5	145.10	0.84	291	51	91	99	1.9	6.0		19.36	**100.7**
	70	147.08	0.82	290	51	91	100	1.9	6.0		19.12	**100.3**
	72.5	149.05	0.8	289	51	91	100	1.9	6.0		18.87	**100.8**
11	75	151.05	0.75	289	51	91	100	1.8	6.0		18.27	**103.5**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	November 29, 2021	**Operator:**	RW

Pitot Factor	0.848	**Filter (mg)**	0.2		
DGMCF	1.026	**Probe (mg)**	3.4		
Barometric Pressure	29.71 "Hg	**CWTR (g)**	476.4		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	24		
Nozzle	0.2533 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.93 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.9
CO2%	10.46
COppm	9.0

Measured H2O
15.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	77.5	152.97	0.75	289	51	91	100	1.8	6.0		18.27	**102.6**
	80	154.87	0.75	289	52	91	100	1.8	6.0		18.27	**101.6**
12	82.5	156.77	0.75	289	52	91	100	1.8	6.0		18.27	**101.6**
	85	158.68	0.73	289	53	91	100	1.8	6.0		18.03	**102.1**
	87.5	160.59	0.72	289	53	91	100	1.8	6.0		17.90	**103.5**
	90	162.53								0.93		**105.8**
1	0	163.46	0.92	289	71	89	92	2.1	6.0		20.24	
	2.5	165.52	0.93	289	68	90	95	2.1	6.0		20.35	**100.4**
	5	167.58	0.93	289	69	90	96	2.1	6.0		20.35	**99.5**
2	7.5	169.62	0.92	290	69	90	96	2.1	6.0		20.25	**98.4**
	10	171.67	0.93	290	69	90	97	2.1	6.0		20.36	**99.5**
	12.5	173.72	0.93	291	69	90	97	2.1	6.0		20.37	**98.9**
3	15	175.77	0.92	290	69	90	98	2.1	6.0		20.25	**99.0**
	17.5	177.80	0.85	290	69	90	98	1.8	6.0		19.46	**98.4**
	20	179.72	0.84	291	69	90	98	1.8	6.0		19.36	**96.7**
4	22.5	181.62	0.71	290	69	90	98	1.6	6.0		17.79	**96.3**
	25	183.41	0.71	290	69	90	99	1.6	6.0		17.79	**98.6**
	27.5	185.19	0.72	291	69	90	99	1.6	6.0		17.93	**98.0**
5	30	187.00	0.6	290	70	91	100	1.5	5.5		16.35	**99.0**
	32.5	188.74	0.61	290	70	91	100	1.5	5.5		16.49	**104.0**
	35	190.45	0.63	291	69	91	100	1.5	5.5		16.77	**101.3**
6	37.5	192.17	0.62	291	69	91	100	1.5	5.5		16.63	**100.4**
	40	193.88	0.62	291	69	91	100	1.5	5.5		16.63	**100.6**
	42.5	195.52	0.62	291	69	91	100	1.5	5.5		16.63	**96.5**
7	45	197.30	0.72	291	69	91	100	1.6	6.0		17.93	**104.7**
	47.5	199.03	0.75	291	69	91	100	1.6	6.0		18.29	**94.5**
	50	200.85	0.75	292	69	91	100	1.6	6.0		18.31	**97.4**
8	52.5	202.70	0.75	292	69	91	100	1.6	6.0		18.31	**99.0**
	55	204.45	0.78	292	70	91	100	1.7	6.0		18.67	**93.7**
	57.5	206.46	0.78	292	69	91	100	1.7	6.0		18.67	**105.5**
9	60	208.34	0.78	292	69	91	100	1.7	6.0		18.67	**98.7**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	November 29, 2021	**Operator:**	RW

Pitot Factor	0.848	**Filter (mg)**	0.2		
DGMCF	1.026	**Probe (mg)**	3.4		
Barometric Pressure	29.71 "Hg	**CWTR (g)**	476.4		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	24		
Nozzle	0.2533 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.93 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.9
CO2%	10.46
COppm	9.0

Measured H2O
15.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	62.5	210.21	0.78	292	70	92	100	1.7	6.0		18.67	**98.2**
	65	212.07	0.77	292	70	92	100	1.7	6.0		18.55	**97.6**
10	67.5	213.95	0.73	291	70	92	100	1.7	6.0		18.05	**99.3**
	70	215.81	0.7	291	70	92	100	1.7	6.0		17.67	**100.8**
	72.5	217.67	0.71	289	70	92	100	1.7	6.0		17.78	**102.9**
11	75	219.57	0.62	289	70	92	100	1.5	6.0		16.61	**104.3**
	77.5	221.28	0.55	289	70	92	100	1.4	6.0		15.65	**100.4**
	80	222.94	0.55	289	71	92	100	1.4	6.0		15.65	**103.4**
12	82.5	224.62	0.58	289	71	92	100	1.4	6.0		16.07	**104.7**
	85	226.28	0.58	289	71	92	100	1.4	6.0		16.07	**100.7**
	87.5	227.93	0.58	289	71	92	101	1.4	6.0		16.07	**100.1**
	90	229.60										**101.2**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	3 - Particulate & Metals
Date:	November 30, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.844
DGM CORRECTION FACTOR	1.026
NOZZLE DIAMETER	6.49 mm
DRY REF GAS VOLUME SAMPLED	4.025 m^3
AVGERGE ISOKINETICITY	99.0 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	143.1 °C
AVERAGE GAS MOISTURE BY VOLUME	14.9 %
AVERAGE GAS VELOCITY	19.48 m/s
BAROMETRIC PRESSURE (Station)	99.966 Kpa
STATIC PRESSURE	-2.888 Kpa
ABSOLUTE GAS PRESSURE	97.078 Kpa
OXYGEN CONCENTRATION	9.1 %
CARBON DIOXIDE CONCENTRATION	10.41 %
CARBON MONOXIDE CONCENTRATION	14.8 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	28.78 m^3/s
DRY REF GAS FLOWRATE	16.80 Rm^3/s
DRY ADJ GAS FLOWRATE	20.03 Rm^3/s
WET REF GAS FLOWRATE	19.75 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	1.7 mg
	-FILTER	0.1 mg
	-TOTAL	1.8 mg
DRY REF GAS VOLUME SAMPLED		4.025 m^3
PARTICULATE CONC. - ACTUAL		0.261 mg/m^3
PARTICULATE CONC. - DRY REF		0.447 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.375 mg/m^3
PARTICULATE CONC. - WET REF		0.380 mg/m^3
PARTICULATE EMISSION RATE		0.007514 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	November 30, 2021	**Operator:**	RW

Pitot Factor	0.844	**Filter (mg)**	0.1		
DGMCF	1.026	**Probe (mg)**	1.7		
Barometric Pressure	29.52 "Hg	**CWTR (g)**	495.1		
Static Pressure	-11.600 "H_2O	**WCBDA (g)**	23.7		
Nozzle	0.2556 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.38 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	9.1
CO2%	10.41
COppm	14.8

Measured H2O
14.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	79.41	0.46	289	81	89	90	1.1	5.0		14.30	
	2.5	80.94	0.96	288	63	89	94	2.3	7.0		20.64	**103.6**
	5	82.91	0.95	287	61	89	95	2.3	7.0		20.52	**92.2**
2	7.5	85.04	0.98	288	59	90	95	2.4	7.0		20.85	**100.1**
	10	87.27	0.95	288	56	90	96	2.3	7.0		20.53	**103.2**
	12.5	89.45	0.95	288	54	90	97	2.3	7.0		20.53	**102.3**
3	15	91.64	0.92	288	52	90	97	2.2	7.0		20.21	**102.7**
	17.5	93.73	0.89	288	51	91	98	2.1	6.5		19.87	**99.5**
	20	95.80	0.9	288	50	91	98	2.1	6.5		19.99	**100.0**
4	22.5	97.87	0.85	288	50	91	98	2	6.5		19.42	**99.5**
	25	99.86	0.85	288	48	91	99	2	6.5		19.42	**98.4**
	27.5	101.90	0.86	289	47	91	99	2	6.5		19.55	**100.8**
5	30	103.90	0.82	289	47	91	99	1.9	6.5		19.09	**98.3**
	32.5	105.89	0.81	289	48	92	100	1.9	6.5		18.97	**100.1**
	35	107.88	0.81	289	48	92	100	1.9	6.5		18.97	**100.6**
6	37.5	109.86	0.74	289	48	92	100	1.8	6.0		18.13	**100.1**
	40	111.76	0.73	289	48	92	100	1.8	6.0		18.01	**100.4**
	42.5	113.69	0.73	289	48	92	100	1.8	6.0		18.01	**102.7**
7	45	115.59	0.81	289	48	92	101	1.9	6.5		18.97	**101.1**
	47.5	117.56	0.81	290	48	92	101	1.9	6.5		18.99	**99.5**
	50	119.56	0.81	290	48	92	101	1.9	6.5		18.99	**101.0**
8	52.5	121.50	0.83	290	48	92	101	1.95	6.5		19.22	**98.0**
	55	123.51	0.83	290	48	92	101	1.95	6.5		19.22	**100.3**
	57.5	125.52	0.83	290	48	92	101	1.9	6.5		19.22	**100.3**
9	60	127.47	0.86	290	48	92	101	2	6.5		19.56	**97.3**
	62.5	129.54	0.85	289	49	93	101	2	6.5		19.44	**101.5**
	65	131.50	0.84	289	49	93	101	1.9	6.5		19.32	**96.5**
10	67.5	133.48	0.86	289	50	93	101	1.9	6.5		19.55	**98.1**
	70	135.47	0.86	289	50	93	101	1.9	6.5		19.55	**97.4**
	72.5	137.44	0.86	289	49	93	101	1.9	6.5		19.55	**96.4**
11	75	139.41	0.79	289	48	93	101	1.8	6.0		18.74	**96.4**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	November 30, 2021	**Operator:**	RW

Pitot Factor	0.844	**Filter (mg)**	0.1		
DGMCF	1.026	**Probe (mg)**	1.7		
Barometric Pressure	29.52 "Hg	**CWTR (g)**	495.1		
Static Pressure	-11.600 "H_2O	**WCBDA (g)**	23.7		
Nozzle	0.2556 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.38 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	9.1
CO2%	10.41
COppm	14.8

Measured H2O
14.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	77.5	141.34	0.78	289	48	93	101	1.8	6.0		18.62	**98.5**
	80	143.20	0.78	289	48	93	101	1.8	6.0		18.62	**95.6**
12	82.5	145.11	0.76	288	47	93	101	1.8	6.0		18.37	**98.2**
	85	146.98	0.76	288	47	93	101	1.8	6.0		18.37	**97.3**
	87.5	148.87	0.76	288	47	93	101	1.8	6.0		18.37	**98.3**
	90	150.92								0.38		**106.7**
1	0	151.30	0.96	288	50	93	98	1.8	6.0		20.64	
	2.5	153.25	0.98	290	50	92	98	2.1	6.0		20.88	**90.5**
	5	155.18	1.1	290	49	93	99	2.1	6.0		22.12	88.9
2	7.5	157.21	1.1	291	50	92	99	2.5	6.0		22.14	88.1
	10	159.43	1.1	291	50	93	100	2.5	6.0		22.14	**96.6**
	12.5	161.69	1.1	291	51	93	100	2.5	7.0		22.14	**98.2**
3	15	163.97	1.1	291	52	93	100	2.5	7.0		22.14	**99.1**
	17.5	166.24	1.1	291	55	94	100	2.5	7.0		22.14	**98.6**
	20	168.51	1.1	291	49	94	100	2.5	7.0		22.14	**98.5**
4	22.5	170.77	0.96	291	48	93	100	2.5	7.0		20.68	**98.1**
	25	172.85	0.95	292	48	93	101	2.7	7.0		20.59	**96.7**
	27.5	175.40	0.96	292	48	93	100	2.1	7.0		20.70	119.2
5	30	177.56	0.96	293	47	93	100	2.1	7.0		20.71	**100.4**
	32.5	179.67	0.89	293	48	93	101	2.1	7.0		19.94	**98.2**
	35	181.75	0.85	293	48	93	101	2.1	7.0		19.49	**100.4**
6	37.5	183.89	0.73	292	48	93	101	1.8	7.0		18.05	**105.7**
	40	185.67	0.69	293	48	93	101	1.8	7.0		17.56	**94.7**
	42.5	187.56	0.71	294	51	93	101	1.8	7.0		17.82	**103.5**
7	45	189.45	0.7	294	48	93	102	1.7	7.0		17.70	**102.1**
	47.5	191.30	0.78	291	48	93	102	1.7	7.0		18.64	**100.6**
	50	193.16	0.8	292	48	93	102	1.7	7.0		18.89	**95.6**
8	52.5	195.04	0.82	292	48	93	102	1.8	7.0		19.13	**95.5**
	55	196.94	0.86	292	49	93	102	1.9	7.0		19.59	**95.3**
	57.5	198.88	0.85	293	48	93	102	2	7.0		19.49	**95.1**
9	60	200.87	0.87	293	48	93	102	2	7.0		19.72	**98.2**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	November 30, 2021	**Operator:**	RW

Pitot Factor	0.844	**Filter (mg)**	0.1		
DGMCF	1.026	**Probe (mg)**	1.7		
Barometric Pressure	29.52 "Hg	**CWTR (g)**	495.1		
Static Pressure	-11.600 "H_2O	**WCBDA (g)**	23.7		
Nozzle	0.2556 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.38 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	9.1
CO2%	10.41
COppm	14.8

Measured H2O
14.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	62.5	202.87	0.87	294	49	93	102	2	7.0		19.73	**97.5**
	65	204.88	0.86	294	49	93	102	2	7.0		19.61	**98.1**
10	67.5	206.88	0.85	294	49	93	102	2	7.0		19.50	**98.2**
	70	208.89	0.84	284	49	93	102	2	7.0		19.26	**99.2**
	72.5	210.89	0.82	284	50	93	102	2	7.0		19.03	**98.7**
11	75	212.88	0.85	284	50	93	102	2	7.0		19.37	**99.4**
	77.5	214.85	0.75	284	50	93	102	1.8	7.0		18.20	**96.6**
	80	216.77	0.75	284	51	93	102	1.8	7.0		18.20	**100.2**
12	82.5	218.68	0.75	284	51	93	102	1.8	7.0		18.20	**99.7**
	85	220.59	0.76	284	51	93	101	1.8	7.0		18.32	**99.7**
	87.5	222.49	0.74	284	51	93	101	1.8	7.0		18.07	**98.6**
	90	224.42										**101.5**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	1 - Particulate & Metals
Date:	November 30 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.026
NOZZLE DIAMETER	6.43 mm
DRY REF GAS VOLUME SAMPLED	3.792 m^3
AVGERGE ISOKINETICITY	100.5 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	142.5 °C
AVERAGE GAS MOISTURE BY VOLUME	15.6 %
AVERAGE GAS VELOCITY	18.39 m/s
BAROMETRIC PRESSURE (Station)	100.237 Kpa
STATIC PRESSURE	-2.465 Kpa
ABSOLUTE GAS PRESSURE	97.772 Kpa
OXYGEN CONCENTRATION	8.56 %
CARBON DIOXIDE CONCENTRATION	11.05 %
CARBON MONOXIDE CONCENTRATION	9.3 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.18 m^3/s
DRY REF GAS FLOWRATE	15.86 Rm^3/s
DRY ADJ GAS FLOWRATE	19.77 Rm^3/s
WET REF GAS FLOWRATE	18.81 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0.2 mg
	-FILTER	1.1 mg
	-TOTAL	1.3 mg
DRY REF GAS VOLUME SAMPLED		3.792 m^3
PARTICULATE CONC. - ACTUAL		0.200 mg/m^3
PARTICULATE CONC. - DRY REF		0.343 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.275 mg/m^3
PARTICULATE CONC. - WET REF		0.289 mg/m^3
PARTICULATE EMISSION RATE		0.005439 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	November 30 2021	**Operator:**	RW

Pitot Factor	0.848	**Filter (mg)**	1.1		
DGMCF	1.026	**Probe (mg)**	0.2		
Barometric Pressure	29.6 "Hg	**CWTR (g)**	493.5		
Static Pressure	-9.900 "H_2O	**WCBDA (g)**	23.5		
Nozzle	0.2533 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.44 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.56
CO2%	11.05
COppm	9.3

Measured H2O
15.6 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	29.97	0.86	289	79	88	89	2	6.0		19.58	
	2.5	31.88	0.87	287	57	88	92	2	6.0		19.67	**97.0**
	5	33.88	0.87	287	53	89	93	2	6.0		19.67	**100.5**
2	7.5	35.88	0.87	287	51	89	94	2	6.0		19.67	**100.3**
	10	37.88	0.87	288	50	89	95	2	6.0		19.68	**100.3**
	12.5	39.87	0.88	288	50	89	96	2	6.0		19.79	**99.7**
3	15	41.85	0.85	288	50	89	97	2	6.0		19.45	**98.6**
	17.5	43.82	0.85	288	51	90	98	2	6.0		19.45	**99.7**
	20	45.81	0.85	288	51	90	98	2	6.0		19.45	**100.5**
4	22.5	47.80	0.77	288	51	91	99	1.8	6.0		18.51	**100.5**
	25	49.69	0.78	288	51	91	99	1.8	6.0		18.63	**100.1**
	27.5	51.57	0.79	288	52	91	100	1.8	6.0		18.75	**98.9**
5	30	53.46	0.72	288	52	91	100	1.7	6.0		17.90	**98.7**
	32.5	55.30	0.72	288	52	91	100	1.7	6.0		17.90	**100.7**
	35	57.13	0.72	288	52	92	101	1.7	6.0		17.90	**100.1**
6	37.5	58.98	0.65	288	52	92	101	1.5	6.0		17.01	**101.0**
	40	60.73	0.64	288	52	92	101	1.5	6.0		16.88	**100.5**
	42.5	62.47	0.65	288	51	92	101	1.5	6.0		17.01	**100.7**
7	45	64.22	0.65	289	51	92	101	1.5	6.0		17.02	**100.5**
	47.5	65.97	0.65	289	50	92	102	1.5	6.0		17.02	**100.6**
	50	67.72	0.65	289	50	92	102	1.5	6.0		17.02	**100.5**
8	52.5	69.46	0.72	289	52	93	102	1.7	6.0		17.91	**99.9**
	55	71.31	0.73	289	49	93	102	1.7	6.0		18.04	**100.9**
	57.5	73.17	0.73	289	48	93	102	1.7	6.0		18.04	**100.8**
9	60	75.03	0.8	289	48	93	102	2	6.5		18.88	**100.8**
	62.5	76.99	0.75	289	48	93	102	1.9	6.5		18.28	**101.5**
	65	78.93	0.78	289	48	93	102	1.9	6.5		18.65	**103.7**
10	67.5	80.87	0.77	290	47	93	102	1.8	6.0		18.54	**101.7**
	70	82.77	0.8	289	47	93	102	1.9	6.5		18.88	**100.3**
	72.5	84.72	0.8	290	47	93	102	1.9	6.5		18.90	**101.0**
11	75	86.68	0.8	290	47	93	102	1.9	6.5		18.90	**101.5**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	November 30 2021	**Operator:**	RW

Pitot Factor	0.848	**Filter (mg)**	1.1		
DGMCF	1.026	**Probe (mg)**	0.2		
Barometric Pressure	29.6 "Hg	**CWTR (g)**	493.5		
Static Pressure	-9.900 "H_2O	**WCBDA (g)**	23.5		
Nozzle	0.2533 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.44 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.56
CO2%	11.05
COppm	9.3

Measured H2O
15.6 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	77.5	88.62	0.7	290	47	93	102	1.7	6.0		17.68	**100.5**
	80	90.50	0.7	286	47	93	102	1.7	6.0		17.63	**104.1**
12	82.5	92.35	0.72	286	47	93	102	1.7	6.0		17.88	**102.1**
	85	94.20	0.71	286	47	93	102	1.7	6.0		17.75	**100.7**
	87.5	96.07	0.71	286	47	93	102	1.7	6.0		17.75	**102.5**
	90	97.93								0.44		**102.0**
1	0	98.37	0.8	289	62	92	96	1.9	6.5		18.88	
	2.5	100.31	0.8	289	47	92	98	1.9	6.5		18.88	**101.1**
	5	102.28	0.79	289	45	92	98	1.9	6.5		18.77	**102.4**
2	7.5	104.22	0.85	288	43	92	99	2.1	7.0		19.45	**101.5**
	10	106.28	0.88	288	43	92	99	2.1	7.0		19.79	**103.8**
	12.5	108.33	0.88	289	43	92	99	2.1	7.0		19.81	**101.5**
3	15	110.38	0.85	289	43	92	99	2	7.0		19.47	**101.6**
	17.5	112.40	0.87	289	43	92	99	2	7.0		19.69	**101.8**
	20	114.36	0.87	289	43	92	100	2	7.0		19.69	**97.7**
4	22.5	116.35	0.84	289	43	92	100	2	7.0		19.35	**99.1**
	25	118.32	0.82	289	43	92	100	2	7.0		19.12	**99.8**
	27.5	120.31	0.82	289	43	92	100	2	7.0		19.12	**102.1**
5	30	122.29	0.76	289	43	90	100	1.8	6.5		18.41	**101.5**
	32.5	124.13	0.76	289	44	92	100	1.8	6.5		18.41	**98.1**
	35	126.00	0.75	289	44	92	100	1.8	6.5		18.28	**99.6**
6	37.5	127.92	0.64	289	44	92	100	1.7	6.0		16.89	**102.9**
	40	129.75	0.64	289	44	92	101	1.7	6.0		16.89	**106.2**
	42.5	131.60	0.63	289	44	92	101	1.4	6.0		16.76	**107.2**
7	45	133.36	0.7	289	45	92	101	1.4	6.0		17.66	**102.7**
	47.5	135.06	0.72	289	45	92	101	1.6	6.0		17.91	**94.1**
	50	136.82	0.73	289	46	92	101	1.6	6.0		18.04	**96.1**
8	52.5	138.61	0.71	289	96	92	101	1.6	6.0		17.79	**97.1**
	55	140.38	0.73	289	46	92	101	1.6	6.0		18.04	**97.4**
	57.5	142.16	0.74	289	46	92	101	1.6	6.0		18.16	**96.6**
9	60	143.97	0.79	289	46	92	101	1.8	6.5		18.77	**97.5**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	November 30 2021	**Operator:**	RW

Pitot Factor	0.848	**Filter (mg)**	1.1		
DGMCF	1.026	**Probe (mg)**	0.2		
Barometric Pressure	29.6 "Hg	**CWTR (g)**	493.5		
Static Pressure	-9.900 "H_2O	**WCBDA (g)**	23.5		
Nozzle	0.2533 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.44 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.56
CO2%	11.05
COppm	9.3

Measured H2O
15.6 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	62.5	145.84	0.79	289	46	92	101	1.8	6.5		18.77	**97.6**
	65	147.77	0.78	289	45	92	101	1.8	6.5		18.65	**100.7**
10	67.5	149.71	0.78	289	45	92	101	1.8	6.5		18.65	**101.9**
	70	151.60	0.78	289	45	92	101	1.8	6.5		18.65	**99.2**
	72.5	153.51	0.78	289	46	92	101	1.8	6.5		18.65	**100.3**
11	75	155.43	0.74	289	46	92	101	1.7	6.5		18.16	**100.8**
	77.5	157.29	0.7	289	46	92	101	1.6	6.5		17.66	**100.2**
	80	159.16	0.7	289	46	92	101	1.6	6.5		17.66	**103.6**
12	82.5	161.04	0.72	289	46	92	101	1.6	6.5		17.91	**104.2**
	85	162.91	0.64	289	46	92	101	1.4	6.0		16.89	**102.2**
	87.5	164.56	0.64	289	47	92	101	1.4	6.0		16.89	**95.6**
	90	166.28										**99.6**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	2 - Particulate & Metals
Date:	December 1 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.844
DGM CORRECTION FACTOR	1.026
NOZZLE DIAMETER	6.49 mm
DRY REF GAS VOLUME SAMPLED	3.898 m^3
AVGERGE ISOKINETICITY	100.4 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	142.3 °C
AVERAGE GAS MOISTURE BY VOLUME	15.2 %
AVERAGE GAS VELOCITY	18.39 m/s
BAROMETRIC PRESSURE (Station)	100.982 Kpa
STATIC PRESSURE	-2.639 Kpa
ABSOLUTE GAS PRESSURE	98.343 Kpa
OXYGEN CONCENTRATION	8.79 %
CARBON DIOXIDE CONCENTRATION	10.89 %
CARBON MONOXIDE CONCENTRATION	12.5 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.18 m^3/s
DRY REF GAS FLOWRATE	16.05 Rm^3/s
DRY ADJ GAS FLOWRATE	19.63 Rm^3/s
WET REF GAS FLOWRATE	18.93 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	1.8 mg
	-FILTER	0.1 mg
	-TOTAL	1.9 mg
DRY REF GAS VOLUME SAMPLED		3.898 m^3
PARTICULATE CONC. - ACTUAL		0.288 mg/m^3
PARTICULATE CONC. - DRY REF		0.487 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.398 mg/m^3
PARTICULATE CONC. - WET REF		0.413 mg/m^3
PARTICULATE EMISSION RATE		0.007822 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	December 1 2021	**Operator:**	RW

Pitot Factor	0.844	**Filter (mg)**	0.1		
DGMCF	1.026	**Probe (mg)**	1.8		
Barometric Pressure	29.82 "Hg	**CWTR (g)**	493.2		
Static Pressure	-10.600 "H_2O	**WCBDA (g)**	21.3		
Nozzle	0.2556 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.42 ft³	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.79
CO2%	10.89
COppm	12.5

Measured H2O
15.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	25.18	0.92	289	81	88	87	2.1	6.0		20.08	
	2.5	27.28	0.9	288	54	88	92	2.1	6.0		19.85	**101.9**
	5	29.30	0.9	288	51	88	83	2.1	6.0		19.85	**98.6**
2	7.5	31.31	0.94	288	50	88	94	2.2	6.0		20.29	**98.9**
	10	33.45	0.92	288	51	89	96	2.2	6.0		20.07	**102.1**
	12.5	35.55	0.93	288	51	89	96	2.2	6.0		20.18	**101.0**
3	15	37.65	0.95	288	54	90	98	2.2	6.0		20.39	**100.4**
	17.5	39.71	0.95	288	55	90	98	2.2	6.0		20.39	**97.2**
	20	41.83	0.94	289	52	90	98	2.2	6.0		20.30	**100.0**
4	22.5	43.95	0.85	289	53	91	100	2	6.0		19.30	**100.6**
	25	45.85	0.85	289	55	91	100	2	6.0		19.30	**94.5**
	27.5	47.96	0.88	289	55	91	100	2.1	6.0		19.64	**105.0**
5	30	49.99	0.81	290	53	92	101	1.9	6.0		18.86	**99.3**
	32.5	51.96	0.81	289	52	92	101	1.9	6.0		18.84	**100.3**
	35	53.93	0.8	289	52	92	101	1.9	6.0		18.73	**100.2**
6	37.5	55.91	0.7	289	52	92	101	1.7	6.0		17.52	**101.3**
	40	57.76	0.7	289	52	92	101	1.7	6.0		17.52	**101.2**
	42.5	59.61	0.68	289	50	93	102	1.6	6.0		17.27	**101.2**
7	45	61.42	0.7	289	50	93	102	1.6	6.0		17.52	**100.2**
	47.5	63.23	0.7	289	50	93	102	1.6	6.0		17.52	**98.8**
	50	65.05	0.7	289	50	93	102	1.6	6.0		17.52	**99.3**
8	52.5	66.83	0.72	288	49	93	103	1.6	6.0		17.75	**97.1**
	55	68.66	0.7	287	49	94	103	1.6	6.0		17.49	**98.3**
	57.5	70.50	0.72	287	48	94	103	1.6	6.0		17.74	**100.1**
9	60	72.31	0.75	286	47	94	104	1.7	6.0		18.10	**97.1**
	62.5	74.18	0.75	287	47	94	104	1.7	6.0		18.11	**98.2**
	65	76.05	0.74	287	47	94	104	1.7	6.0		17.99	**98.2**
10	67.5	77.93	0.75	287	47	94	104	1.7	6.0		18.11	**99.4**
	70	79.80	0.75	287	47	94	104	1.7	6.0		18.11	**98.2**
	72.5	81.67	0.76	287	47	95	104	1.7	6.0		18.23	**98.2**
11	75	83.54	0.75	287	47	95	104	1.7	6.0		18.11	**97.5**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	December 1 2021	**Operator:**	RW

Pitot Factor	0.844	**Filter (mg)**	0.1		
DGMCF	1.026	**Probe (mg)**	1.8		
Barometric Pressure	29.82 "Hg	**CWTR (g)**	493.2		
Static Pressure	-10.600 "H_2O	**WCBDA (g)**	21.3		
Nozzle	0.2556 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.42 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.79
CO2%	10.89
COppm	12.5

Measured H2O
15.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	77.5	85.41	0.74	287	47	95	104	1.7	6.0		17.99	**98.1**
	80	87.28	0.74	287	47	95	104	1.7	6.0		17.99	**98.8**
12	82.5	89.15	0.74	287	47	95	104	1.7	6.0		17.99	**98.8**
	85	91.01	0.6	287	47	95	104	1.5	6.0		16.20	**98.3**
	87.5	92.76	0.6	287	47	95	104	1.5	6.0		16.20	**102.6**
	90	94.49								0.42		**101.5**
1	0	94.91	0.9	288	62	94	99	2.1	6.0		19.85	
	2.5	96.99	0.9	287	50	94	101	2.1	6.0		19.84	**100.4**
	5	98.99	0.89	287	48	94	101	2.1	6.0		19.73	**96.3**
2	7.5	101.20	0.91	287	48	95	102	2.2	6.0		19.95	**107.0**
	10	103.31	0.9	287	49	95	102	2.1	6.0		19.84	**100.8**
	12.5	105.46	0.91	287	50	95	103	2.1	6.0		19.95	**103.3**
3	15	107.53	0.89	287	50	95	103	2	6.0		19.73	**98.8**
	17.5	109.61	0.87	287	50	95	103	2	6.0		19.50	**100.4**
	20	111.64	0.87	287	51	95	104	2	6.0		19.50	**99.1**
4	22.5	113.68	0.85	287	51	95	104	2	6.0		19.28	**99.5**
	25	115.66	0.84	287	51	95	104	2	6.0		19.16	**97.7**
	27.5	117.67	0.85	288	51	95	104	2	6.0		19.29	**99.7**
5	30	119.69	0.74	288	51	95	104	1.8	6.0		18.00	**99.7**
	32.5	121.61	0.75	288	52	96	104	1.8	6.0		18.12	**101.5**
	35	123.53	0.73	288	52	96	104	1.8	6.0		17.88	**100.8**
6	37.5	125.45	0.73	288	50	96	105	1.8	6.0		17.88	**102.1**
	40	127.36	0.65	288	49	96	105	1.6	6.0		16.87	**101.5**
	42.5	129.18	0.64	288	49	96	105	1.6	6.0		16.74	**102.5**
7	45	131.00	0.72	288	49	96	105	1.8	6.0		17.75	**103.3**
	47.5	132.88	0.72	289	48	96	105	1.8	6.0		17.77	**100.6**
	50	134.79	0.72	289	48	96	105	1.8	6.0		17.77	**102.3**
8	52.5	136.69	0.78	289	48	96	105	2	6.0		18.49	**101.7**
	55	138.69	0.78	289	47	96	105	2	6.0		18.49	**103.0**
	57.5	140.68	0.77	289	48	96	105	2	6.0		18.37	**102.4**
9	60	142.68	0.84	289	48	96	105	2.1	6.0		19.19	**103.6**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	December 1 2021	**Operator:**	RW

Pitot Factor	0.844	**Filter (mg)**	0.1		
DGMCF	1.026	**Probe (mg)**	1.8		
Barometric Pressure	29.82 "Hg	**CWTR (g)**	493.2		
Static Pressure	-10.600 "H_2O	**WCBDA (g)**	21.3		
Nozzle	0.2556 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.42 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.79
CO2%	10.89
COppm	12.5

Measured H2O
15.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	62.5	144.74	0.82	289	48	97	105	2.1	6.0		18.96	**102.2**
	65	146.79	0.79	289	48	97	105	2	6.0		18.61	**102.9**
10	67.5	148.79	0.74	289	48	97	105	1.8	6.0		18.01	**102.2**
	70	150.70	0.74	289	49	97	105	1.8	6.0		18.01	**100.8**
	72.5	152.62	0.74	289	49	97	105	1.8	6.0		18.01	**101.3**
11	75	154.54	0.62	289	49	97	106	1.5	6.0		16.49	**101.3**
	77.5	156.31	0.65	289	49	97	106	1.5	6.0		16.88	**101.9**
	80	158.04	0.65	289	50	97	106	1.5	6.0		16.88	**97.3**
12	82.5	159.79	0.55	289	50	97	106	1.3	6.0		15.53	**98.4**
	85	161.43	0.55	289	50	97	106	1.3	6.0		15.53	**100.2**
	87.5	163.07	0.54	289	51	97	106	1.3	6.0		15.39	**100.2**
	90	164.80										**106.7**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	3 - Particulate & Metals
Date:	December 1 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT		0.844
DGM CORRECTION FACTOR		1.026
NOZZLE DIAMETER		6.49 mm
DRY REF GAS VOLUME SAMPLED		3.873 m^3
AVGERGE ISOKINETICITY		99.9 %
STACK DIAMETER		1.37 m
LENGTH		0.00 m
WIDTH		0.00 m
AREA OF STACK or DUCT		1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE		141.0 °C
AVERAGE GAS MOISTURE BY VOLUME		15.2 %
AVERAGE GAS VELOCITY		18.36 m/s
BAROMETRIC PRESSURE (Station)		100.847 Kpa
STATIC PRESSURE		-2.714 Kpa
ABSOLUTE GAS PRESSURE		98.133 Kpa
OXYGEN CONCENTRATION		9.16 %
CARBON DIOXIDE CONCENTRATION		10.60 %
CARBON MONOXIDE CONCENTRATION		18.9 ppm

FLOWRATE

ACTUAL GAS FLOWRATE		27.13 m^3/s
DRY REF GAS FLOWRATE		16.04 Rm^3/s
DRY ADJ GAS FLOWRATE		19.02 Rm^3/s
WET REF GAS FLOWRATE		18.92 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0.5 mg
	-FILTER	0.7 mg
	-TOTAL	1.2 mg
DRY REF GAS VOLUME SAMPLED		3.873 m^3
PARTICULATE CONC. - ACTUAL		0.183 mg/m^3
PARTICULATE CONC. - DRY REF		0.310 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.261 mg/m^3
PARTICULATE CONC. - WET REF		0.263 mg/m^3
PARTICULATE EMISSION RATE		0.004968 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	December 1 2021	**Operator:**	BM

Pitot Factor	0.844	**Filter (mg)**	0.7		
DGMCF	1.026	**Probe (mg)**	0.5		
Barometric Pressure	29.78 "Hg	**CWTR (g)**	488.2		
Static Pressure	-10.900 "H_2O	**WCBDA (g)**	23.1		
Nozzle	0.2556 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.79 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	9.16
CO2%	10.60
COppm	18.9

Measured H2O
15.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	65.56	0.83	288	78	94	96	2	6.0		19.09	
	2.5	67.58	0.85	288	60	95	99	2	6.0		19.32	**101.7**
	5	69.57	0.86	288	57	95	100	2	6.0		19.43	**98.6**
2	7.5	71.55	0.86	288	57	95	101	2.1	6.0		19.43	**97.5**
	10	73.58	0.87	287	54	95	102	2.1	6.0		19.53	**99.8**
	12.5	75.62	0.87	287	55	96	103	2.1	6.0		19.53	**99.6**
3	15	77.65	0.85	287	56	96	104	2.1	6.0		19.31	**98.9**
	17.5	79.68	0.87	287	56	96	104	2.1	6.0		19.53	**100.0**
	20	81.73	0.86	287	56	96	105	2.1	6.0		19.42	**99.8**
4	22.5	83.76	0.78	287	56	97	105	1.9	6.0		18.50	**99.3**
	25	85.71	0.8	287	56	97	106	1.9	6.0		18.73	**100.1**
	27.5	87.66	0.83	287	57	97	106	2	6.0		19.08	**98.7**
5	30	89.66	0.77	287	58	97	106	2	6.0		18.38	**99.4**
	32.5	91.65	0.78	287	57	98	107	1.9	6.0		18.50	**102.7**
	35	93.62	0.78	287	57	98	107	1.9	6.0		18.50	**100.8**
6	37.5	95.55	0.69	287	56	98	107	1.8	6.0		17.40	**98.8**
	40	97.42	0.69	287	56	98	107	1.8	6.0		17.40	**101.7**
	42.5	99.29	0.67	287	56	98	107	1.8	6.0		17.14	**101.7**
7	45	101.16	0.73	287	55	98	107	1.8	6.0		17.89	**103.2**
	47.5	103.02	0.75	287	54	98	107	1.8	6.0		18.14	**98.4**
	50	104.88	0.75	287	53	98	107	1.8	6.0		18.14	**97.0**
8	52.5	106.78	0.78	288	55	98	107	1.8	6.0		18.51	**99.1**
	55	108.67	0.78	288	52	99	108	1.9	6.0		18.51	**96.8**
	57.5	110.62	0.78	289	52	99	108	1.9	6.0		18.52	**99.7**
9	60	112.56	0.8	289	52	99	108	1.9	6.0		18.76	**99.2**
	62.5	114.52	0.84	289	52	99	108	2	6.0		19.22	**99.0**
	65	116.51	0.85	289	52	99	108	2	6.0		19.33	**98.1**
10	67.5	118.50	0.88	290	52	99	108	2.1	6.0		19.69	**97.5**
	70	120.55	0.86	291	52	99	108	2.1	6.0		19.47	**98.8**
	72.5	122.59	0.86	291	51	99	108	2.1	6.0		19.47	**99.6**
11	75	124.62	0.75	281	51	99	108	1.8	6.0		18.06	**99.1**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	December 1 2021	**Operator:**	BM

Pitot Factor	0.844	**Filter (mg)**	0.7		
DGMCF	1.026	**Probe (mg)**	0.5		
Barometric Pressure	29.78 "Hg	**CWTR (g)**	488.2		
Static Pressure	-10.900 "H_2O	**WCBDA (g)**	23.1		
Nozzle	0.2556 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.79 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	9.16
CO2%	10.60
COppm	18.9

Measured H2O
15.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	77.5	126.56	0.75	261	51	99	108	1.8	6.0		17.82	**100.6**
	80	128.49	0.74	264	51	99	108	1.8	6.0		17.74	**98.8**
12	82.5	130.42	0.73	278	51	99	108	1.8	6.0		17.79	**99.6**
	85	132.35	0.76	277	51	99	108	1.8	6.0		18.13	**101.3**
	87.5	134.28	0.74	277	51	99	108	1.8	6.0		17.89	**99.2**
	90	136.19								0.79		**99.5**
1	0	136.98	0.9	288	81	98	108	2.1	6.0		19.88	
	2.5	139.09	0.91	289	58	98	103	2.1	6.0		20.00	**100.5**
	5	141.08	0.9	289	53	98	104	2	6.0		19.89	**94.8**
2	7.5	143.05	0.93	289	53	98	105	2.2	6.5		20.22	**94.3**
	10	145.12	0.92	289	53	98	106	2.2	6.5		20.11	**97.4**
	12.5	147.24	0.92	289	53	98	106	2.2	6.5		20.11	**100.2**
3	15	149.35	0.88	288	54	99	106	2.1	6.5		19.66	**99.7**
	17.5	151.38	0.88	288	54	99	107	2.1	6.5		19.66	**97.9**
	20	153.46	0.88	287	55	99	107	2.1	6.5		19.65	**100.2**
4	22.5	155.41	0.81	287	55	99	107	2.1	6.5		18.85	**93.9**
	25	157.46	0.81	287	54	99	107	2	6.5		18.85	**102.9**
	27.5	159.46	0.8	287	53	99	108	2	6.5		18.73	**100.4**
5	30	161.48	0.73	287	52	99	108	2	6.5		17.89	**101.9**
	32.5	163.49	0.73	287	52	99	108	1.9	6.5		17.89	**106.2**
	35	165.44	0.72	287	52	99	108	1.9	6.5		17.77	**103.0**
6	37.5	167.36	0.73	287	52	99	108	1.8	6.5		17.89	**102.1**
	40	169.24	0.63	287	51	100	108	1.7	6.5		16.62	**99.2**
	42.5	171.09	0.63	285	51	100	108	1.6	6.5		16.60	**105.0**
7	45	172.91	0.68	285	52	100	108	1.6	6.5		17.25	**103.1**
	47.5	174.70	0.67	285	51	100	108	1.7	6.5		17.12	**97.6**
	50	176.55	0.69	285	51	100	109	1.7	6.5		17.37	**101.7**
8	52.5	178.38	0.72	285	51	100	109	1.7	6.5		17.75	**99.0**
	55	180.23	0.72	285	51	100	109	1.7	6.5		17.75	**98.0**
	57.5	182.07	0.73	285	50	100	109	1.8	6.5		17.87	**97.5**
9	60	183.97	0.76	285	50	100	109	1.8	6.5		18.23	**100.0**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	December 1 2021	**Operator:**	BM

Pitot Factor	0.844	**Filter (mg)**	0.7		
DGMCF	1.026	**Probe (mg)**	0.5		
Barometric Pressure	29.78 "Hg	**CWTR (g)**	488.2		
Static Pressure	-10.900 "H_2O	**WCBDA (g)**	23.1		
Nozzle	0.2556 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.79 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	9.16
CO2%	10.60
COppm	18.9

Measured H2O
15.2 %

				Temperatures								
Point	**Time**	**DGM Reading**	**ΔP "H2O**	**Stack °F**	**Imp. Out °F**	**DGM Out °F**	**DGM In °F**	**ΔH "H2O**	**Vacuum "Hg**	**Leak Check Volume**	**Velocity m/s**	**Isokinetic %**
	62.5	185.87	0.72	285	50	100	109	1.9	6.5		17.75	**98.0**
	65	187.80	0.76	285	49	100	109	1.8	6.5		18.23	**102.3**
10	67.5	189.70	0.8	285	49	100	109	1.8	6.5		18.71	**98.0**
	70	191.60	0.78	285	49	100	109	1.9	6.5		18.47	**95.5**
	72.5	193.56	0.76	285	49	100	109	1.9	6.5		18.23	**99.8**
11	75	195.52	0.67	285	49	100	109	1.7	6.5		17.12	**101.1**
	77.5	197.35	0.68	285	50	100	109	1.7	6.5		17.25	**100.5**
	80	199.18	0.68	285	50	100	109	1.7	6.5		17.25	**99.8**
12	82.5	201.00	0.49	285	50	100	109	1.4	6.5		14.64	**99.2**
	85	202.65	0.51	285	50	100	109	1.4	6.5		14.94	**105.9**
	87.5	204.30	0.49	285	51	100	109	1.4	6.5		14.64	**103.8**
	90	205.96										**106.5**

APPENDIX 23

Particle Size Distribution Test Emission Calculations
(12 pages)

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	November 30, 2021
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	1
Test Location:	APC Outlet No. 1

Project No.: 22081
Operator: DU

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.48
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	1
Pitot Factor	0.845
Barometric Pressure (" Hg)	29.60
Static Pressure ("H_2O)	-11.60
Oxygen Content (%)	8.59
Carbon Dioxide Content (%)	10.77
Carbon Monoxide Content (PPM)	8.1
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft^3/min*	10.0 l/min*
Cyclone Qs_{actual}	0.60 ft^3/min	17.1 l/min
Stack Gas Sampling Parameters		
V_{ms}	42.5 Rft^3*	1.203 Rm^3*
Average Cyclone I Cut Diameter		10.06 µm
Average Cyclone IV Cut Diameter		2.32 µm
Average Isokineticity		90.7 %
Stack Gas Physical Parameters		
B_{ws}	15.7 % v/v	
Average m	220.3 (dimensionless)	
M_d	30.07 lbs/lbs mole	
M_w	28.18 lbs/lbs mole	
Average T_s	283 °F	140 °C
Average U_s	63.4 ft/s	19.3 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	60592 ACFM	28.6 m^3/s
Wet Reference Q_s	42052 SCFM*	19.8 Rm^3/s*
Dry Reference Q_s	35462 SCFM*	16.7 Rm^3/s*

Summary of Particulate Emission Rates	Dry Ref. Conc.	Emission Rate
Total Part. (a)	0.33 mg/Rm^3*	0.0056 g/s
Total Part. (b)	4.24 mg/Rm^3*	0.071 g/s
PM_{10} Part. (b)	4.16 mg/Rm^3*	0.070 g/s
$PM_{2.5}$ Part. (b)	3.99 mg/Rm^3*	0.067 g/s
Cond. Part.	3.91 mg/Rm^3*	0.065 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	516.0	60.6	767.7	930.3	
final volume or weight (ml or mg)	673.0	60.2	766.5	939.3	
gain in volume or weight (ml or mg)	157.0	-0.4	-1.2	9.0	0.0
				TOTAL	164.4

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.1	0.2	<0.1		4.7

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: November 30, 2021	**Plant:** DYEC	**Test No.:** 1	**Project No.:** 22081
Client: Covanta	**Location:** Courtice, Ontario	**Test location:** APC Outlet No. 1	**Operator:** DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	Delta P ("H_2O)	Desired cfm	Stack Temp (°F)	Meter Temp Outlet (°F)	Meter Temp Inlet (°F)	Meter Pressure DH ("H_2O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
2	1	0.00	10.7	82.79	0.98	0.35	283	89	89	0.38	3.0	68.4	10.33	2.40	82.4
	2	10.7	10.6	86.54	0.92	0.35	284	90	88	0.38	3.0	66.3	10.50	2.47	83.2
	3	21.2	10.2	90.17	0.85	0.35	284	91	89	0.38	3.0	63.7	10.07	2.30	91.8
	4	31.4	10.0	93.90	0.86	0.35	284	92	90	0.38	3.0	64.1	9.59	2.11	97.7
	5	41.4	9.5	97.81	0.77	0.35	284	92	90	0.38	3.0	60.7	10.10	2.31	96.1
	6	50.9	8.9	101.27	0.69	0.35	284	92	90	0.38	3.0	57.4	10.01	2.27	102.8
		59.8		104.56											
1	1	0.00	10.50	104.56	1.02	0.35	282	91	89	0.38	3.0	69.7	10.06	2.29	83.8
	2	10.5	10.50	108.40	0.97	0.35	284	91	89	0.38	3.0	68.1	10.14	2.33	85.2
	3	21.0	10.39	112.20	0.90	0.35	283	92	90	0.38	3.0	65.5	10.26	2.37	86.8
	4	31.4	10.27	115.90	0.83	0.35	283	92	90	0.38	3.0	62.9	10.20	2.35	91.2
	5	41.7	9.49	119.59	0.73	0.35	283	92	90	0.38	3.0	59.0	10.22	2.36	96.9
	6	51.1	9.04	122.99	0.63	0.35	283	93	91	0.38	3.0	54.8	9.23	1.97	120.5
		60.2		126.74											
Averages					**0.85**		**283**	**90**		**0.38**		**63.4**	**10.06**	**2.32**	**90.7**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	November 30, 2021
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	2
Test Location:	APC Outlet No. 1

Project No.: 22081
Operator: DU

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.48
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	1
Pitot Factor	0.845
Barometric Pressure (" Hg)	29.56
Static Pressure ("H_2O)	-11.60
Oxygen Content (%)	8.62
Carbon Dioxide Content (%)	10.73
Carbon Monoxide Content (PPM)	10.2
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft^3/min*	10.0 l/min*
Cyclone Qs_{actual}	0.60 ft^3/min	17.1 l/min
Stack Gas Sampling Parameters		
V_{ms}	42.5 Rft^3*	1.203 Rm^3*
Average Cyclone I Cut Diameter		10.08 µm
Average Cyclone IV Cut Diameter		2.30 µm
Average Isokineticity		95.8 %
Stack Gas Physical Parameters		
B_{ws}	15.4 % v/v	
Average m	220.4 (dimensionless)	
M_d	30.06 lbs/lbs mole	
M_w	28.21 lbs/lbs mole	
Average T_s	283 °F	139 °C
Average U_s	60.7 ft/s	18.5 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	57978 ACFM	27.4 m^3/s
Wet Reference Q_s	40218 SCFM*	19.0 Rm^3/s*
Dry Reference Q_s	34042 SCFM*	16.1 Rm^3/s*

Summary of Particulate Emission Rates	Dry Ref. Conc.	Emission Rate
Total Part. (a)	0.83 mg/Rm^3*	0.0134 g/s
Total Part. (b)	5.74 mg/Rm^3*	0.092 g/s
PM_{10} Part. (b)	5.57 mg/Rm^3*	0.090 g/s
$PM_{2.5}$ Part. (b)	5.32 mg/Rm^3*	0.086 g/s
Cond. Part.	4.91 mg/Rm^3*	0.079 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	487.6	577.7	726.9	971.1	
final volume or weight (ml or mg)	638.7	578.7	725.7	980.7	
gain in volume or weight (ml or mg)	151.1	1.0	-1.2	9.6	0.0
				TOTAL	160.5

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.2	0.3	0.4	<0.1	5.9

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: November 30, 2021	**Plant:** DYEC	**Test No.:** 2	**Project No.:** 22081
Client: Covanta	**Location:** Courtice, Ontario	**Test location:** APC Outlet No. 1	**Operator:** DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	Delta P ("H_2O)	Desired cfm	Stack Temp (°F)	Meter Temp Outlet (°F)	Meter Temp Inlet (°F)	Meter Pressure DH ("H_2O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
2	1	0.00	10.8	26.93	0.90	0.35	282	90	89	0.38	3.0	65.5	9.82	2.20	92.4
	2	10.8	10.5	31.03	0.86	0.35	282	90	89	0.38	3.0	64.0	10.11	2.31	90.7
	3	21.2	10.0	34.84	0.81	0.35	283	91	89	0.38	3.0	62.2	10.22	2.36	92.1
	4	31.3	10.1	38.45	0.77	0.35	282	91	89	0.38	3.0	60.6	10.22	2.36	94.3
	5	41.4	9.6	42.08	0.71	0.35	283	92	90	0.38	3.0	58.2	9.77	2.18	104.9
	6	51.0	9.1	45.75	0.63	0.35	283	92	90	0.38	3.0	54.8	9.62	2.12	113.8
		60.0		49.30											
1	1	0.00	11.01	49.30	0.90	0.35	283	91	89	0.38	3.0	65.5	10.09	2.30	89.0
	2	11.0	10.74	53.33	0.82	0.35	283	91	89	0.38	3.0	62.6	10.31	2.39	90.4
	3	21.7	10.34	57.14	0.82	0.35	283	91	89	0.38	3.0	62.6	10.04	2.29	93.9
	4	32.1	9.93	60.95	0.79	0.35	283	92	90	0.38	3.0	61.4	10.27	2.38	92.6
	5	42.0	9.31	64.50	0.67	0.35	283	92	90	0.38	3.0	56.5	10.31	2.40	100.0
	6	51.3	8.65	67.81	0.61	0.35	283	92	90	0.38	3.0	54.0	10.21	2.35	106.3
		60.0		70.93											
Averages					**0.77**		**283**	**90**		**0.38**		**60.7**	**10.08**	**2.30**	**95.8**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	November 30, 2021
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	3
Test Location:	APC Outlet No. 1

Project No.: 22081
Operator: DU

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.48
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	1
Pitot Factor	0.845
Barometric Pressure (" Hg)	29.52
Static Pressure ("H_2O)	-11.60
Oxygen Content (%)	8.66
Carbon Dioxide Content (%)	10.62
Carbon Monoxide Content (PPM)	15.2
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.36 Rft^3/min*	10.3 l/min*
Cyclone Qs_{actual}	0.63 ft^3/min	17.9 l/min
Stack Gas Sampling Parameters		
V_{ms}	43.6 Rft^3*	1.235 Rm^3*
Average Cyclone I Cut Diameter		9.77 µm
Average Cyclone IV Cut Diameter		2.18 µm
Average Isokineticity		95.9 %
Stack Gas Physical Parameters		
B_{ws}	16.7 % v/v	
Average m	220.0 (dimensionless)	
M_d	30.05 lbs/lbs mole	
M_w	28.03 lbs/lbs mole	
Average T_s	285 °F	141 °C
Average U_s	63.9 ft/s	19.5 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	61057 ACFM	28.8 m^3/s
Wet Reference Q_s	42153 SCFM*	19.9 Rm^3/s*
Dry Reference Q_s	35108 SCFM*	16.6 Rm^3/s*

Summary of Particulate Emission Rates	Dry Ref. Conc.	Emission Rate
Total Part. (a)	0.49 mg/Rm^3*	0.0081 g/s
Total Part. (b)	5.02 mg/Rm^3*	0.083 g/s
PM_{10} Part. (b)	4.94 mg/Rm^3*	0.082 g/s
$PM_{2.5}$ Part. (b)	4.86 mg/Rm^3*	0.081 g/s
Cond. Part.	4.53 mg/Rm^3*	0.075 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	516.0	560.6	766.5	939.3	
final volume or weight (ml or mg)	689.7	560.3	765.7	949.0	
gain in volume or weight (ml or mg)	173.7	-0.3	-0.8	9.7	0.0
				TOTAL	182.3

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.1	0.1	0.3	<0.1	5.6

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: November 30, 2021	**Plant:** DYEC	**Test No.:** 3	**Project No.:** 22081
Client: Covanta	**Location:** Courtice, Ontario	**Test location:** APC Outlet No. 1	**Operator:** DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	Delta P ("H_2O)	Desired cfm	Stack Temp (°F)	Meter Temp Outlet (°F)	Meter Temp Inlet (°F)	Meter Pressure DH ("H_2O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
2	1	0.00	10.8	71.11	0.98	0.35	282	89	88	0.38	3.0	68.6	9.60	2.12	90.8
	2	10.8	10.6	75.26	0.97	0.35	284	89	89	0.38	3.0	68.3	9.71	2.16	90.0
	3	21.4	10.2	79.26	0.93	0.35	286	91	89	0.38	3.0	67.0	9.99	2.27	88.6
	4	31.6	10.0	83.00	0.88	0.35	285	91	89	0.38	3.0	65.1	9.90	2.24	92.1
	5	41.6	9.6	86.69	0.81	0.35	286	91	89	0.38	3.0	62.5	9.42	2.05	103.0
	6	51.2	9.0	90.49	0.68	0.35	287	91	89	0.38	3.0	57.3	9.67	2.15	108.4
		60.2		93.94											
1	1	0.00	10.8	93.94	0.94	0.35	283	90	89	0.38	3.0	67.2	10.01	2.28	87.5
	2	10.8	10.3	97.86	0.92	0.35	286	91	90	0.38	3.0	66.7	10.11	2.32	87.5
	3	21.1	10.3	101.56	0.86	0.35	286	91	90	0.38	3.0	64.4	10.11	2.32	90.5
	4	31.4	10.1	105.26	0.80	0.35	286	91	90	0.38	3.0	62.2	10.10	2.32	94.0
	5	41.5	9.3	108.90	0.75	0.35	286	91	90	0.38	3.0	60.2	8.58	1.74	122.2
	6	50.9	8.9	113.12	0.67	0.35	286	91	90	0.38	3.0	56.9	10.07	2.31	103.1
		59.8		116.33											
Averages					**0.85**		**285**	**90**		**0.38**		**63.9**	**9.77**	**2.18**	**95.9**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	November 29, 2021
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	1
Test Location:	APC Outlet No. 2

Project No.: 22085
Operator: DU

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.48
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	1
Pitot Factor	0.845
Barometric Pressure (" Hg)	29.74
Static Pressure ("H_2O)	-9.10
Oxygen Content (%)	8.98
Carbon Dioxide Content (%)	10.81
Carbon Monoxide Content (PPM)	10.2
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft^3/min*	9.9 l/min*
Cyclone Qs_{actual}	0.60 ft^3/min	17.0 l/min
Stack Gas Sampling Parameters		
V_{ms}	42.1 Rft^3*	1.193 Rm^3*
Average Cyclone I Cut Diameter		10.17 µm
Average Cyclone IV Cut Diameter		2.34 µm
Average Isokineticity		93.3 %
Stack Gas Physical Parameters		
B_{ws}	15.9 % v/v	
Average m	221.9 (dimensionless)	
M_d	30.09 lbs/lbs mole	
M_w	28.17 lbs/lbs mole	
Average T_s	289 °F	143 °C
Average U_s	61.5 ft/s	18.8 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	58827 ACFM	27.8 m^3/s
Wet Reference Q_s	40970 SCFM*	19.3 Rm^3/s*
Dry Reference Q_s	34465 SCFM*	16.3 Rm^3/s*

Summary of Particulate Emission Rates	Dry Ref. Conc.	Emission Rate
Total Part. (a)	0.50 mg/Rm^3*	0.0082 g/s
Total Part. (b)	4.53 mg/Rm^3*	0.074 g/s
PM_{10} Part. (b)	4.44 mg/Rm^3*	0.072 g/s
$PM_{2.5}$ Part. (b)	4.36 mg/Rm^3*	0.071 g/s
Cond. Part.	4.03 mg/Rm^3*	0.065 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	487.6	575.1	729.2	942.6	
final volume or weight (ml or mg)	632.0	579.3	729.7	959.1	
gain in volume or weight (ml or mg)	144.4	4.2	0.5	16.5	0.0
				TOTAL	165.6

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	<0.1	0.1	0.3	<0.1	4.8

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: November 29, 2021	**Plant:** DYEC	**Test No.:** 1	**Project No.:** 22085
Client: Covanta	**Location:** Courtice, Ontario	**Test location:** APC Outlet No. 2	**Operator:** DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	Delta P ("H_2O)	Desired cfm	Stack Temp (°F)	Meter Temp Outlet (°F)	Meter Temp Inlet (°F)	Meter Pressure DH ("H_2O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
1	1	0.00	10.7	51.81	0.96	0.35	288	84	83	0.38	3.0	67.5	10.16	2.33	85.8
	2	10.7	10.6	55.62	0.90	0.35	288	85	83	0.38	3.0	65.4	10.23	2.36	87.9
	3	21.2	10.2	59.36	0.88	0.35	289	87	83	0.38	3.0	64.7	10.14	2.32	90.0
	4	31.4	10.0	63.03	0.82	0.35	290	88	84	0.38	3.0	62.5	10.19	2.34	92.7
	5	41.4	9.5	66.60	0.73	0.35	291	90	86	0.38	3.0	59.0	10.12	2.32	99.3
	6	50.9	8.9	70.04	0.65	0.35	291	90	86	0.38	3.0	55.7	10.28	2.38	102.9
		59.8		73.20											
2	1	0.00	10.5	73.20	0.88	0.35	288	91	87	0.38	3.0	64.7	10.06	2.29	90.9
	2	10.5	10.5	77.04	0.84	0.35	290	91	88	0.38	3.0	63.3	10.13	2.32	92.3
	3	21.0	10.4	80.85	0.80	0.35	289	92	88	0.38	3.0	61.7	10.11	2.31	94.8
	4	31.4	10.3	84.63	0.78	0.35	289	93	89	0.38	3.0	60.9	10.14	2.32	95.6
	5	41.7	9.5	88.36	0.74	0.35	289	93	89	0.38	3.0	59.3	10.42	2.43	94.5
	6	51.1	9.0	91.68	0.61	0.35	288	89	88	0.38	3.0	53.8	10.07	2.30	109.0
		60.2		94.98											
Averages					**0.80**		**289**	**88**		**0.38**		**61.5**	**10.17**	**2.34**	**93.3**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	November 29, 2021
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	2
Test Location:	APC Outlet No. 2

Project No.: 22085
Operator: DU

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.48
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	1
Pitot Factor	0.845
Barometric Pressure (" Hg)	29.71
Static Pressure ("H_2O)	-9.10
Oxygen Content (%)	9.12
Carbon Dioxide Content (%)	10.53
Carbon Monoxide Content (PPM)	10.8
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft^3/min*	10.0 l/min*
Cyclone Qs_{actual}	0.60 ft^3/min	17.1 l/min
Stack Gas Sampling Parameters		
V_{ms}	42.5 Rft^3*	1.205 Rm^3*
Average Cyclone I Cut Diameter		10.19 µm
Average Cyclone IV Cut Diameter		2.36 µm
Average Isokineticity		90.2 %
Stack Gas Physical Parameters		
B_{ws}	15.0 % v/v	
Average m	224.2 (dimensionless)	
M_d	30.05 lbs/lbs mole	
M_w	28.24 lbs/lbs mole	
Average T_s	295 °F	146 °C
Average U_s	64.2 ft/s	19.6 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	61394 ACFM	29.0 m^3/s
Wet Reference Q_s	42384 SCFM*	20.0 Rm^3/s*
Dry Reference Q_s	36009 SCFM*	17.0 Rm^3/s*

Summary of Particulate Emission Rates	Dry Ref. Conc.	Emission Rate
Total Part. (a)	0.66 mg/Rm^3*	0.0113 g/s
Total Part. (b)	5.48 mg/Rm^3*	0.093 g/s
PM_{10} Part. (b)	5.31 mg/Rm^3*	0.090 g/s
$PM_{2.5}$ Part. (b)	5.06 mg/Rm^3*	0.086 g/s
Cond. Part.	4.81 mg/Rm^3*	0.082 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	516.1	560.6	766.5	919.5	
final volume or weight (ml or mg)	650.0	571.6	767.7	930.3	
gain in volume or weight (ml or mg)	133.9	11.0	1.2	10.8	0.0
				TOTAL	156.9

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.2	0.3	0.2	<0.1	5.8

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: November 29, 2021	**Plant:** DYEC	**Test No.:** 2	**Project No.:** 22085
Client: Covanta	**Location:** Courtice, Ontario	**Test location:** APC Outlet No. 2	**Operator:** DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	Delta P ("H_2O)	Desired cfm	Stack Temp (°F)	Meter Temp Outlet (°F)	Meter Temp Inlet (°F)	Meter Pressure DH ("H_2O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
2	1	0.00	11.0	95.13	1.00	0.35	292	87	87	0.38	3.0	69.1	10.22	2.36	84.0
	2	11.0	10.6	99.10	0.94	0.35	294	86	86	0.38	3.0	67.0	10.14	2.33	87.8
	3	21.6	10.5	102.98	0.92	0.35	294	85	85	0.38	3.0	66.3	10.26	2.37	87.3
	4	32.1	10.1	106.75	0.86	0.35	293	87	85	0.38	3.0	64.1	10.15	2.33	91.6
	5	42.3	9.6	110.45	0.82	0.35	294	88	86	0.38	3.0	62.6	10.44	2.45	90.2
	6	51.9	9.0	113.81	0.71	0.35	295	88	87	0.38	3.0	58.3	10.27	2.38	99.3
		60.9		117.06											
1	1	0.00	10.5	117.06	1.00	0.35	292	90	89	0.38	3.0	69.1	10.31	2.39	83.0
	2	10.5	10.3	120.83	0.97	0.35	298	89	88	0.38	3.0	68.3	10.22	2.36	85.8
	3	20.8	10.0	124.56	0.92	0.35	300	89	88	0.38	3.0	66.6	10.15	2.33	89.2
	4	30.8	9.9	128.24	0.83	0.35	298	90	88	0.38	3.0	63.2	10.06	2.30	94.9
	5	40.7	9.6	131.92	0.75	0.35	296	91	89	0.38	3.0	60.0	10.10	2.31	99.1
	6	50.4	8.8	135.49	0.66	0.35	294	90	89	0.38	3.0	56.2	9.98	2.26	107.2
		59.1		138.78											
Averages					**0.87**		**295**	**88**		**0.38**		**64.2**	**10.19**	**2.36**	**90.2**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	November 29, 2021
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	3
Test Location:	APC Outlet No. 2

Project No.: 22085
Operator: DU

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.48
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	1
Pitot Factor	0.845
Barometric Pressure (" Hg)	29.71
Static Pressure ("H_2O)	-9.10
Oxygen Content (%)	8.85
Carbon Dioxide Content (%)	10.76
Carbon Monoxide Content (PPM)	9.4
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.1776

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft^3/min*	10.0 l/min*
Cyclone Qs_{actual}	0.61 ft^3/min	17.3 l/min
Stack Gas Sampling Parameters		
V_{ms}	42.4 Rft^3*	1.201 Rm^3*
Average Cyclone I Cut Diameter		10.10 µm
Average Cyclone IV Cut Diameter		2.32 µm
Average Isokineticity		95.1 %
Stack Gas Physical Parameters		
B_{ws}	16.1 % v/v	
Average m	223.2 (dimensionless)	
M_d	30.08 lbs/lbs mole	
M_w	28.13 lbs/lbs mole	
Average T_s	295 °F	146 °C
Average U_s	61.8 ft/s	18.8 m/s
Stack Area	15.9 ft^2	1.48 m^2
Actual Q_s	59079 ACFM	27.9 m^3/s
Wet Reference Q_s	40790 SCFM*	19.3 Rm^3/s*
Dry Reference Q_s	34226 SCFM*	16.2 Rm^3/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	**Emission Rate**
Total Part. (a)	0.33 mg/Rm^3*	0.0054 g/s
Total Part. (b)	8.24 mg/Rm^3*	0.133 g/s
PM_{10} Part. (b)	8.16 mg/Rm^3*	0.132 g/s
$PM_{2.5}$ Part. (b)	8.07 mg/Rm^3*	0.130 g/s
Cond. Part.	7.91 mg/Rm^3*	0.128 g/s

(a) does not include condensibles
(b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	487.6	577.7	729.7	959.1	
final volume or weight (ml or mg)	646.6	579.0	726.9	971.1	
gain in volume or weight (ml or mg)	159.0	1.3	-2.8	12.0	0.0
				TOTAL	**169.5**

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.1	0.1	0.1	<0.1	9.5

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: November 29, 2021	**Plant:** DYEC	**Test No.:** 3	**Project No.:** 22085
Client: Covanta	**Location:** Courtice, Ontario	**Test location:** APC Outlet No. 2	**Operator:** DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	Delta P ("H_2O)	Desired cfm	Stack Temp (°F)	Meter Temp Outlet (°F)	Meter Temp Inlet (°F)	Meter Pressure DH ("H_2O)	Pump Vacuum Gauge ("Hg)	Stack Gas Velocity (ft/s)	Cyclone I Cut Diam. (mm)	Cyclone IV Cut Diam. (mm)	ISO (%)
2	1	0.00	10.8	38.95	0.91	0.35	290	88	87	0.38	3.0	65.9	10.18	2.34	88.0
	2	10.8	10.4	42.81	0.90	0.35	296	87	86	0.38	3.0	65.8	10.16	2.34	89.2
	3	21.2	10.3	46.56	0.84	0.35	296	89	87	0.38	3.0	63.6	10.05	2.29	93.8
	4	31.6	10.0	50.34	0.76	0.35	295	89	87	0.38	3.0	60.4	10.13	2.33	97.4
	5	41.5	9.8	53.95	0.69	0.35	295	89	87	0.38	3.0	57.6	10.00	2.28	104.1
	6	51.3	9.1	57.54	0.63	0.35	295	90	88	0.38	3.0	55.0	10.21	2.36	105.8
		60.4		60.79											
1	1	0.00	10.8	60.79	0.84	0.35	292	90	88	0.38	3.0	63.4	9.89	2.23	95.5
	2	10.8	10.6	64.82	0.84	0.35	295	90	89	0.38	3.0	63.5	10.20	2.35	91.8
	3	21.4	10.3	68.63	0.87	0.35	295	90	89	0.38	3.0	64.7	10.18	2.35	90.4
	4	31.7	9.8	72.35	0.85	0.35	296	90	89	0.38	3.0	64.0	9.95	2.26	94.6
	5	41.5	9.3	76.00	0.78	0.35	297	91	90	0.38	3.0	61.3	10.17	2.35	95.8
	6	50.9	8.8	79.37	0.66	0.35	297	91	90	0.38	3.0	56.4	10.11	2.32	105.1
		59.6		82.56											
Averages					**0.80**		**295**	**89**		**0.38**		**61.8**	**10.10**	**2.32**	**95.1**

APPENDIX 24

Acid Gases Test Emission Calculations
(12 pages)

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 1
Test No.:	1 - M26A
Date:	November 29, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.842
DGM CORRECTION FACTOR	0.996
NOZZLE DIAMETER	6.38 mm
DRY REF GAS VOLUME SAMPLED	1.190 m^3
AVGERGE ISOKINETICITY	98.1 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	140.0 °C
AVERAGE GAS MOISTURE BY VOLUME	14.5 %
AVERAGE GAS VELOCITY	17.67 m/s
BAROMETRIC PRESSURE (Station)	100.745 Kpa
STATIC PRESSURE	-2.689 Kpa
ABSOLUTE GAS PRESSURE	98.056 Kpa
OXYGEN CONCENTRATION	8.9 %
CARBON DIOXIDE CONCENTRATION	10.69 %
CARBON MONOXIDE CONCENTRATION	5.6 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.11 m^3/s
DRY REF GAS FLOWRATE	15.59 Rm^3/s
DRY ADJ GAS FLOWRATE	18.90 Rm^3/s
WET REF GAS FLOWRATE	18.24 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.190 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	1 - M26A	**Test Location:**	APC Outlet No. 1
Date:	November 29, 2021	**Operator:**	bm

Pitot Factor	0.842	**Filter (mg)**	0		
DGMCF	0.996	**Probe (mg)**	0		
Barometric Pressure	29.75 "Hg	**CWTR (g)**	136.5		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	11.6		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		12	

Combustion Gases	
O2%	8.9
CO2%	10.69
COppm	5.6

Measured H2O
14.5 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
4	0	94.72	0.75	278	68	83	84	1.9	3.0		17.96	
	5	98.39	0.72	285	62	83	84	1.8	3.0		17.68	**98.6**
	10	101.89	0.71	285	60	83	85	1.8	3.0		17.56	**96.4**
	15	105.27	0.72	285	59	83	87	1.9	3.0		17.68	**93.7**
	20	108.90	0.73	285	59	84	89	1.9	3.0		17.80	**99.8**
	25	112.34	0.73	285	59	85	91	2	3.0		17.80	**93.6**
	30	115.97	0.71	284	60	85	92	2	3.0		17.55	**98.6**
	35	119.61	0.71	284	61	86	93	2	3.0		17.55	**100.1**
	40	123.24	0.71	284	56	87	94	2	3.0		17.55	**99.6**
	45	126.88	0.72	284	55	87	95	2	3.0		17.67	**99.7**
	50	130.53	0.71	284	53	88	95	2	3.0		17.55	**99.2**
	55	134.16	0.72	284	53	88	96	2	3.0		17.67	**99.2**
	60	137.78										**98.2**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 1
Test No.:	2 - M26A
Date:	November 29, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.842
DGM CORRECTION FACTOR	0.996
NOZZLE DIAMETER	6.38 mm
DRY REF GAS VOLUME SAMPLED	1.173 m^3
AVGERGE ISOKINETICITY	99.7 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	140.9 °C
AVERAGE GAS MOISTURE BY VOLUME	15.4 %
AVERAGE GAS VELOCITY	17.37 m/s
BAROMETRIC PRESSURE (Station)	100.643 Kpa
STATIC PRESSURE	-2.689 Kpa
ABSOLUTE GAS PRESSURE	97.954 Kpa
OXYGEN CONCENTRATION	8.66 %
CARBON DIOXIDE CONCENTRATION	10.82 %
CARBON MONOXIDE CONCENTRATION	8.0 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.66 m^3/s
DRY REF GAS FLOWRATE	15.12 Rm^3/s
DRY ADJ GAS FLOWRATE	18.69 Rm^3/s
WET REF GAS FLOWRATE	17.86 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.173 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	2 - M26A	**Test Location:**	APC Outlet No. 1
Date:	November 29, 2021	**Operator:**	bm

Pitot Factor	0.842	**Filter (mg)**	0		
DGMCF	0.996	**Probe (mg)**	0		
Barometric Pressure	29.72 "Hg	**CWTR (g)**	147.5		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	9		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		12	

Combustion Gases	
O2%	8.66
CO2%	10.82
COppm	8.0

Measured H2O
15.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
4	0	38.41	0.71	277	71	89	89	2	3.0		17.50	
	5	42.08	0.71	286	59	89	89	2	3.0		17.61	**101.1**
	10	45.72	0.7	285	57	89	91	2	3.0		17.47	**100.9**
	15	49.32	0.69	285	57	89	93	2	3.0		17.35	**100.3**
	20	52.93	0.66	285	58	89	95	1.9	3.0		16.97	**101.1**
	25	56.51	0.69	285	58	90	96	1.8	3.0		17.35	**102.3**
	30	60.08	0.69	287	59	90	97	1.8	3.0		17.37	**99.6**
	35	63.44	0.71	287	60	91	97	1.9	3.0		17.62	**93.8**
	40	67.01	0.7	288	61	91	98	1.9	3.0		17.51	**98.1**
	45	70.56	0.69	288	56	92	99	1.9	3.0		17.38	**98.3**
	50	74.12	0.67	287	55	92	99	1.9	3.0		17.12	**99.1**
	55	77.71	0.67	288	55	92	99	1.9	3.0		17.13	**101.3**
	60	81.28										**100.8**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 1
Test No.:	3 - M26A
Date:	November 29, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT		0.842
DGM CORRECTION FACTOR		0.996
NOZZLE DIAMETER		6.38 mm
DRY REF GAS VOLUME SAMPLED		1.230 m^3
AVGERGE ISOKINETICITY		100.3 %
STACK DIAMETER		1.37 m
LENGTH		0.00 m
WIDTH		0.00 m
AREA OF STACK or DUCT		1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	142.3 °C
AVERAGE GAS MOISTURE BY VOLUME	16.3 %
AVERAGE GAS VELOCITY	18.36 m/s
BAROMETRIC PRESSURE (Station)	100.610 Kpa
STATIC PRESSURE	-2.689 Kpa
ABSOLUTE GAS PRESSURE	97.920 Kpa
OXYGEN CONCENTRATION	8.8 %
CARBON DIOXIDE CONCENTRATION	10.56 %
CARBON MONOXIDE CONCENTRATION	9.3 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.13 m^3/s
DRY REF GAS FLOWRATE	15.76 Rm^3/s
DRY ADJ GAS FLOWRATE	19.26 Rm^3/s
WET REF GAS FLOWRATE	18.82 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.230 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	3 - M26A	**Test Location:**	APC Outlet No. 1
Date:	November 29, 2021	**Operator:**	bm

Pitot Factor	0.842	**Filter (mg)**	0		
DGMCF	0.996	**Probe (mg)**	0		
Barometric Pressure	29.71 "Hg	**CWTR (g)**	168.7		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	7.1		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		12	

Combustion Gases	
O2%	8.8
CO2%	10.56
COppm	9.3

Measured H2O
16.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
4	0	81.92	0.76	284	68	91	90	2.1	3.0		18.24	
	5	85.69	0.77	288	55	91	90	2.1	3.0		18.41	**101.5**
	10	89.39	0.79	288	50	90	91	2.1	3.0		18.65	**99.2**
	15	93.13	0.78	288	50	90	93	2.1	3.0		18.53	**99.0**
	20	96.88	0.76	288	50	90	94	2.1	3.0		18.29	**99.7**
	25	100.65	0.76	288	50	91	96	2.1	3.0		18.29	**101.5**
	30	104.48	0.76	288	51	91	97	2.1	3.0		18.29	**102.8**
	35	108.12	0.77	289	51	92	97	2.1	3.0		18.43	**97.6**
	40	111.89	0.76	289	51	92	98	2.1	3.0		18.31	**100.4**
	45	115.66	0.77	289	52	92	99	2.1	3.0		18.43	**101.0**
	50	119.42	0.76	289	52	93	99	2.1	3.0		18.31	**100.0**
	55	123.17	0.75	289	53	93	99	2.1	3.0		18.18	**100.3**
	60	126.92										**100.9**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	1 - M26A
Date:	November 30, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT		0.842
DGM CORRECTION FACTOR		0.996
NOZZLE DIAMETER		6.38 mm
DRY REF GAS VOLUME SAMPLED		1.180 m^3
AVGERGE ISOKINETICITY		100.2 %
STACK DIAMETER		1.37 m
LENGTH		0.00 m
WIDTH		0.00 m
AREA OF STACK or DUCT		1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE		141.6 °C
AVERAGE GAS MOISTURE BY VOLUME		15.9 %
AVERAGE GAS VELOCITY		17.56 m/s
BAROMETRIC PRESSURE (Station)		100.237 Kpa
STATIC PRESSURE		-2.465 Kpa
ABSOLUTE GAS PRESSURE		97.772 Kpa
OXYGEN CONCENTRATION		8.63 %
CARBON DIOXIDE CONCENTRATION		10.87 %
CARBON MONOXIDE CONCENTRATION		10.5 ppm

FLOWRATE

ACTUAL GAS FLOWRATE		25.95 m^3/s
DRY REF GAS FLOWRATE		15.13 Rm^3/s
DRY ADJ GAS FLOWRATE		18.75 Rm^3/s
WET REF GAS FLOWRATE		18.00 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.180 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	1 - M26A	**Test Location:**	APC Outlet No. 2
Date:	November 30, 2021	**Operator:**	bm

Pitot Factor	0.842	**Filter (mg)**	0		
DGMCF	0.996	**Probe (mg)**	0		
Barometric Pressure	29.6 "Hg	**CWTR (g)**	154.9		
Static Pressure	-9.900 "H_2O	**WCBDA (g)**	9.7		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		12	

Combustion Gases	
O2%	8.63
CO2%	10.87
COppm	10.5

Measured H2O
15.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
4	0	27.56	0.66	267	72	89	89	1.9	3.0		16.80	
	5	31.13	0.71	287	67	89	89	1.9	3.0		17.66	**101.6**
	10	34.66	0.71	288	60	89	90	2	3.0		17.67	**98.2**
	15	38.27	0.69	288	58	89	93	2	3.0		17.42	**100.4**
	20	41.87	0.69	288	57	90	95	2	3.0		17.42	**101.3**
	25	45.48	0.7	288	57	90	96	2	3.0		17.55	**101.3**
	30	49.08	0.71	289	57	91	98	2	3.0		17.68	**100.2**
	35	52.70	0.69	289	57	92	98	2	3.0		17.43	**99.9**
	40	56.33	0.71	289	57	92	99	2	3.0		17.68	**101.5**
	45	59.97	0.72	290	58	93	100	2	3.0		17.82	**100.2**
	50	63.62	0.72	290	59	94	100	2	3.0		17.82	**99.7**
	55	67.25	0.72	290	60	94	101	2	3.0		17.82	**99.0**
	60	70.90										**99.5**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	2- M26A
Date:	November 30, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.842
DGM CORRECTION FACTOR	0.996
NOZZLE DIAMETER	6.38 mm
DRY REF GAS VOLUME SAMPLED	1.173 m^3
AVGERGE ISOKINETICITY	99.0 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	142.4 °C
AVERAGE GAS MOISTURE BY VOLUME	16.7 %
AVERAGE GAS VELOCITY	17.87 m/s
BAROMETRIC PRESSURE (Station)	100.203 Kpa
STATIC PRESSURE	-2.465 Kpa
ABSOLUTE GAS PRESSURE	97.738 Kpa
OXYGEN CONCENTRATION	8.53 %
CARBON DIOXIDE CONCENTRATION	11.13 %
CARBON MONOXIDE CONCENTRATION	8.1 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.40 m^3/s
DRY REF GAS FLOWRATE	15.22 Rm^3/s
DRY ADJ GAS FLOWRATE	19.02 Rm^3/s
WET REF GAS FLOWRATE	18.28 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.173 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	2- M26A	**Test Location:**	APC Outlet No. 2
Date:	November 30, 2021	**Operator:**	bm

Pitot Factor	0.842	**Filter (mg)**	0		
DGMCF	0.996	**Probe (mg)**	0		
Barometric Pressure	29.59 "Hg	**CWTR (g)**	160.8		
Static Pressure	-9.900 "H_2O	**WCBDA (g)**	12.2		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		12	

Combustion Gases	
O2%	8.53
CO2%	11.13
COppm	8.1

Measured H2O
16.7 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
4	0	71.64	0.68	280	73	93	93	2	3.0		17.22	
	5	74.58	0.72	289	65	94	94	2	3.0		17.83	83.2
	10	78.23	0.73	289	64	94	94	2	3.0		17.95	**100.9**
	15	81.87	0.76	289	64	94	96	2	3.0		18.32	**99.9**
	20	85.51	0.74	289	64	94	98	2.1	3.0		18.08	**97.7**
	25	89.25	0.72	289	62	94	99	2.1	3.0		17.83	**101.6**
	30	92.97	0.74	289	61	94	99	2	3.0		18.08	**102.4**
	35	96.66	0.74	289	62	94	100	2	3.0		18.08	**100.1**
	40	100.33	0.72	289	63	95	100	2	3.0		17.83	**99.5**
	45	103.99	0.71	289	62	95	101	2	3.0		17.70	**100.5**
	50	107.66	0.71	289	59	95	101	2	3.0		17.70	**101.4**
	55	111.31	0.72	289	57	95	101	2	3.0		17.83	**100.8**
	60	114.95										**99.9**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test Location:	APC Outlet No. 2
Test No.:	3- M26A
Date:	December 1, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.842
DGM CORRECTION FACTOR	0.996
NOZZLE DIAMETER	6.38 mm
DRY REF GAS VOLUME SAMPLED	1.207 m^3
AVGERGE ISOKINETICITY	99.9 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	142.6 °C
AVERAGE GAS MOISTURE BY VOLUME	15.7 %
AVERAGE GAS VELOCITY	17.91 m/s
BAROMETRIC PRESSURE (Station)	100.948 Kpa
STATIC PRESSURE	-2.639 Kpa
ABSOLUTE GAS PRESSURE	98.309 Kpa
OXYGEN CONCENTRATION	8.93 %
CARBON DIOXIDE CONCENTRATION	10.70 %
CARBON MONOXIDE CONCENTRATION	18.8 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.46 m^3/s
DRY REF GAS FLOWRATE	15.52 Rm^3/s
DRY ADJ GAS FLOWRATE	18.76 Rm^3/s
WET REF GAS FLOWRATE	18.41 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.207 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, Ontario
Test No.:	3- M26A	**Test Location:**	APC Outlet No. 2
Date:	December 1, 2021	**Operator:**	bm

Pitot Factor	0.842	**Filter (mg)**	0		
DGMCF	0.996	**Probe (mg)**	0		
Barometric Pressure	29.81 "Hg	**CWTR (g)**	157.7		
Static Pressure	-10.600 "H_2O	**WCBDA (g)**	7.5		
Nozzle	0.251 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		1	
		Number of points / Port		12	

Combustion Gases	
O2%	8.93
CO2%	10.70
COppm	18.8

Measured H2O
15.7 %

				Temperatures								
Point	**Time**	**DGM Reading**	**ΔP "H2O**	**Stack °F**	**Imp. Out °F**	**DGM Out °F**	**DGM In °F**	**ΔH "H2O**	**Vacuum "Hg**	**Leak Check Volume**	**Velocity m/s**	**Isokinetic %**
4	0	27.24	0.75	283	72	86	88	2	3.0		18.05	
	5	30.87	0.75	289	60	87	88	2	3.0		18.12	**98.5**
	10	34.48	0.74	289	58	87	90	2	3.0		18.00	**98.3**
	15	38.06	0.77	289	59	88	92	2.1	3.0		18.36	**97.9**
	20	41.76	0.75	290	59	88	94	2.1	3.0		18.13	**99.0**
	25	45.46	0.79	290	61	89	96	2.2	3.0		18.61	**100.2**
	30	49.24	0.76	290	59	90	97	2.2	3.0		18.25	**99.5**
	35	53.03	0.74	290	58	91	98	2.1	3.0		18.01	**101.5**
	40	56.75	0.72	290	58	92	99	2.1	3.0		17.76	**100.8**
	45	60.46	0.7	289	58	93	100	2	3.0		17.50	**101.7**
	50	64.09	0.67	288	49	93	100	1.9	3.0		17.11	**100.6**
	55	67.64	0.66	287	58	94	101	1.9	3.0		16.97	**100.5**
	60	71.18										**100.7**

APPENDIX 25

SVOC Test Emission Calculations
(18 pages)

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	1 - SVOC
Date:	December 1, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.844
DGM CORRECTION FACTOR	1
NOZZLE DIAMETER	6.40 mm
DRY REF GAS VOLUME SAMPLED	4.718 m^3
AVGERGE ISOKINETICITY	100.0 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	138.9 °C
AVERAGE GAS MOISTURE BY VOLUME	15.5 %
AVERAGE GAS VELOCITY	17.20 m/s
BAROMETRIC PRESSURE (Station)	100.982 Kpa
STATIC PRESSURE	-2.913 Kpa
ABSOLUTE GAS PRESSURE	98.069 Kpa
OXYGEN CONCENTRATION	8.56 %
CARBON DIOXIDE CONCENTRATION	10.92 %
CARBON MONOXIDE CONCENTRATION	10.3 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.42 m^3/s
DRY REF GAS FLOWRATE	15.04 Rm^3/s
DRY ADJ GAS FLOWRATE	18.74 Rm^3/s
WET REF GAS FLOWRATE	17.81 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.718 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	December 1, 2021	**Operator:**	DU

Pitot Factor	0.844	**Filter (mg)**	0		
DGMCF	1	**Probe (mg)**	0		
Barometric Pressure	29.82 "Hg	**CWTR (g)**	620.5		
Static Pressure	-11.700 "H_2O	**WCBDA (g)**	16.9		
Nozzle	0.252 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.39 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.56
CO2%	10.92
COppm	10.3

Measured H2O
15.5 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	16.69	0.83	282	58	89	88	1.8	4.0		19.03	
	5	20.40	0.83	284	51	89	88	1.9	4.0		19.05	**94.8**
2	10	24.16	0.78	283	50	90	89	1.9	4.0		18.46	**96.2**
	15	28.07	0.79	282	50	91	89	1.9	4.0		18.56	**102.9**
3	20	31.96	0.73	282	50	91	89	1.7	4.5		17.84	**101.6**
	25	35.66	0.75	281	50	92	90	1.7	4.5		18.07	**100.5**
4	30	39.33	0.72	281	51	92	89	1.7	4.5		17.71	**98.1**
	35	42.99	0.71	281	51	93	90	1.7	4.5		17.59	**99.9**
5	40	46.66	0.69	281	51	93	90	1.7	4.5		17.34	**100.7**
	45	50.33	0.68	281	51	95	90	1.7	4.5		17.21	**102.2**
6	50	53.98	0.58	280	51	95	90	1.3	4.0		15.88	**102.2**
	55	57.30	0.57	279	52	95	91	1.3	4.0		15.74	**100.4**
7	60	60.57	0.66	280	53	96	91	1.3	4.0		16.94	**99.6**
	65	63.81	0.71	280	52	96	92	1.7	4.5		17.57	**91.7**
8	70	67.43	0.7	281	52	96	92	1.7	4.5		17.46	**98.8**
	75	71.11	0.71	281	53	96	92	1.7	4.5		17.59	**101.2**
9	80	74.72	0.75	281	52	96	92	1.8	5.0		18.07	**98.6**
	85	78.47	0.76	281	52	96	93	1.8	5.0		18.19	**99.7**
10	90	82.22	0.73	281	52	96	93	1.8	5.0		17.83	**98.9**
	95	85.96	0.74	281	52	96	93	1.8	5.0		17.95	**100.7**
11	100	89.70	0.63	281	52	96	93	1.5	4.5		16.57	**100.0**
	105	93.22	0.62	281	53	97	93	1.5	4.5		16.43	**101.9**
12	110	96.72	0.62	281	54	97	93	1.5	4.5		16.43	**102.1**
	115	100.21	0.62	281	54	97	94	1.5	4.5		16.43	**101.8**
	120	103.72								0.39		**102.3**
1	0	104.11	0.79	281	60	96	94	1.9	5.0		18.55	
	5	107.94	0.79	282	50	96	94	1.9	5.0		18.56	**99.1**
2	10	111.88	0.79	282	48	97	94	1.9	5.0		18.56	**102.0**
	15	115.68	0.81	283	48	97	94	1.9	5.0		18.81	**98.3**
3	20	119.55	0.79	284	47	98	94	1.9	5.0		18.59	**98.9**

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	December 1, 2021	**Operator:**	DU

Pitot Factor	0.844	**Filter (mg)**	0		
DGMCF	1	**Probe (mg)**	0		
Barometric Pressure	29.82 "Hg	**CWTR (g)**	620.5		
Static Pressure	-11.700 "H_2O	**WCBDA (g)**	16.9		
Nozzle	0.252 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.39 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.56
CO2%	10.92
COppm	10.3

Measured H2O
15.5 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	25	123.41	0.78	284	47	98	94	1.9	5.0		18.47	**99.9**
4	30	127.27	0.73	284	47	98	94	1.9	5.0		17.87	**100.5**
	35	131.13	0.71	284	49	99	95	1.9	5.0		17.62	**103.9**
5	40	134.98	0.65	284	50	99	95	1.5	5.0		16.86	**104.9**
	45	138.52	0.65	284	50	99	95	1.5	5.0		16.86	**100.7**
6	50	142.03	0.61	284	51	99	95	1.5	5.0		16.33	**99.8**
	55	145.54	0.62	284	51	99	95	1.5	5.0		16.47	**103.0**
7	60	149.04	0.62	284	51	99	95	1.5	5.0		16.47	**101.9**
	65	152.53	0.63	283	50	99	96	1.5	5.0		16.59	**101.6**
8	70	156.02	0.63	283	50	99	96	1.5	5.0		16.59	**100.7**
	75	159.45	0.63	282	50	99	96	1.5	5.0		16.58	**98.9**
9	80	162.96	0.65	282	50	99	96	1.5	5.0		16.84	**101.2**
	85	166.44	0.64	283	51	99	96	1.5	5.0		16.72	**98.7**
10	90	169.93	0.63	283	51	100	96	1.5	5.0		16.59	**99.9**
	95	173.37	0.65	282	52	100	96	1.5	5.0		16.84	**99.1**
11	100	176.83	0.5	282	52	100	96	1.1	4.5		14.77	**98.1**
	105	179.91	0.5	282	53	100	96	1.1	4.5		14.77	**99.5**
12	110	182.91	0.49	282	53	100	96	1.1	4.5		14.62	**96.9**
	115	185.90	0.51	282	53	100	96	1.2	4.5		14.91	**97.5**
	120	189.00										**99.1**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	2 - SVOC
Date:	December 1, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.844
DGM CORRECTION FACTOR	1
NOZZLE DIAMETER	6.40 mm
DRY REF GAS VOLUME SAMPLED	4.889 m^3
AVGERGE ISOKINETICITY	98.7 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	144.3 °C
AVERAGE GAS MOISTURE BY VOLUME	16.3 %
AVERAGE GAS VELOCITY	18.52 m/s
BAROMETRIC PRESSURE (Station)	100.643 Kpa
STATIC PRESSURE	-2.913 Kpa
ABSOLUTE GAS PRESSURE	97.730 Kpa
OXYGEN CONCENTRATION	8.48 %
CARBON DIOXIDE CONCENTRATION	10.88 %
CARBON MONOXIDE CONCENTRATION	12.2 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.37 m^3/s
DRY REF GAS FLOWRATE	15.78 Rm^3/s
DRY ADJ GAS FLOWRATE	19.79 Rm^3/s
WET REF GAS FLOWRATE	18.86 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.889 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	December 1, 2021	**Operator:**	RW

Pitot Factor	0.844	**Filter (mg)**	0		
DGMCF	1	**Probe (mg)**	0		
Barometric Pressure	29.72 "Hg	**CWTR (g)**	681.5		
Static Pressure	-11.700 "H_2O	**WCBDA (g)**	19		
Nozzle	0.252 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.49 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.48
CO2%	10.88
COppm	12.2

Measured H2O
16.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	78.55	0.92	290	92	101	100	2	6.5		20.21	
	5	82.43	0.91	282	62	99	98	2	6.5		19.99	**93.2**
2	10	86.31	0.93	283	59	98	98	2	7.0		20.23	**93.5**
	15	90.22	0.93	283	56	98	98	2.1	7.0		20.23	**93.4**
3	20	94.30	0.89	283	56	99	98	2	7.0		19.79	**97.5**
	25	98.31	0.89	283	56	99	98	2	7.0		19.79	**97.8**
4	30	102.33	0.85	283	55	100	98	2	7.5		19.34	**98.1**
	35	106.40	0.85	285	55	100	98	2	7.5		19.36	**101.5**
5	40	110.32	0.78	285	55	100	98	1.9	7.5		18.55	**97.9**
	45	114.24	0.78	285	55	100	98	1.9	7.5		18.55	**102.2**
6	50	118.20	0.72	285	54	101	98	1.8	7.5		17.82	**103.2**
	55	122.18	0.72	285	54	101	99	1.8	7.5		17.82	**107.8**
7	60	125.85	0.76	286	52	101	98	1.8	7.0		18.32	**99.4**
	65	129.82	0.76	586	52	101	98	1.8	7.0		21.70	**104.8**
8	70	133.32	0.82	286	52	101	98	1.9	7.5		19.03	**109.4**
	75	137.19	0.81	285	48	102	99	1.9	7.5		18.90	**98.4**
9	80	141.07	0.78	285	48	102	99	1.8	7.5		18.55	**99.0**
	85	144.91	0.79	285	48	102	99	1.8	7.5		18.67	**99.8**
10	90	148.80	0.81	285	49	102	99	1.9	7.5		18.90	**100.5**
	95	152.68	0.82	285	49	102	99	1.9	7.5		19.02	**99.0**
11	100	156.58	0.83	286	46	102	99	1.9	7.5		19.15	**98.9**
	105	160.40	0.81	286	47	102	99	1.9	7.5		18.91	**96.3**
12	110	164.27	0.78	286	48	102	99	1.9	7.5		18.56	**98.8**
	115	168.11	0.78	286	48	102	99	1.9	7.5		18.56	**99.9**
	120	172.04								0.49		**102.2**
1	0	172.53	0.94	285	54	101	100	2.1	8.0		20.36	
	5	176.57	0.94	285	51	100	99	2.1	8.0		20.36	**95.7**
2	10	180.67	0.96	285	53	100	98	2.1	8.5		20.58	**97.3**
	15	184.73	0.95	285	53	100	99	2.1	8.5		20.47	**95.4**
3	20	188.82	0.9	285	53	100	99	2.1	8.5		19.92	**96.6**

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	December 1, 2021	**Operator:**	RW

Pitot Factor	0.844	**Filter (mg)**	0		
DGMCF	1	**Probe (mg)**	0		
Barometric Pressure	29.72 "Hg	**CWTR (g)**	681.5		
Static Pressure	-11.700 "H_2O	**WCBDA (g)**	19		
Nozzle	0.252 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.49 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.48
CO2%	10.88
COppm	12.2

Measured H2O
16.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	25	192.88	0.88	285	54	100	99	2	8.5		19.70	**98.5**
4	30	196.90	0.79	285	54	100	99	1.8	8.5		18.67	**98.6**
	35	200.76	0.8	285	55	100	99	1.8	9.0		18.78	**99.9**
5	40	204.60	0.72	285	55	101	99	1.6	8.0		17.82	**98.7**
	45	208.29	0.7	285	56	100	99	1.6	8.0		17.57	**99.9**
6	50	211.90	0.69	285	56	100	99	1.5	7.0		17.44	**99.2**
	55	215.34	0.61	285	55	101	99	1.3	7.0		16.40	**95.2**
7	60	218.62	0.69	286	56	101	99	1.6	7.0		17.46	**96.4**
	65	222.11	0.7	286	54	102	99	1.6	7.0		17.58	**96.5**
8	70	225.70	0.72	287	54	102	100	1.6	7.5		17.84	**98.5**
	75	229.29	0.74	287	54	102	100	1.6	7.5		18.09	**97.1**
9	80	232.88	0.78	288	55	102	100	1.8	8.0		18.59	**95.8**
	85	236.66	0.73	287	54	102	100	1.7	8.0		17.97	**98.3**
10	90	240.35	0.69	287	54	102	100	1.6	8.0		17.47	**99.1**
	95	243.90	0.71	287	54	102	100	1.6	8.0		17.72	**98.1**
11	100	247.63	0.52	287	55	101	100	1.1	6.5		15.16	**101.6**
	105	250.75	0.5	287	56	101	100	1.1	6.0		14.87	**99.3**
12	110	253.78	0.45	287	57	101	100	0.92	5.5		14.11	**98.3**
	115	256.56	0.46	287	58	102	100	0.94	6.0		14.26	**95.0**
	120	259.37										**94.9**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	3 - SVOC
Date:	December 2, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT		0.846
DGM CORRECTION FACTOR		1
NOZZLE DIAMETER		6.38 mm
DRY REF GAS VOLUME SAMPLED		4.606 m^3
AVGERGE ISOKINETICITY		95.9 %
STACK DIAMETER		1.37 m
LENGTH		0.00 m
WIDTH		0.00 m
AREA OF STACK or DUCT		1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	139.1 °C
AVERAGE GAS MOISTURE BY VOLUME	15.8 %
AVERAGE GAS VELOCITY	18.05 m/s
BAROMETRIC PRESSURE (Station)	98.747 Kpa
STATIC PRESSURE	-2.540 Kpa
ABSOLUTE GAS PRESSURE	96.207 Kpa
OXYGEN CONCENTRATION	8.33 %
CARBON DIOXIDE CONCENTRATION	10.85 %
CARBON MONOXIDE CONCENTRATION	9.2 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.67 m^3/s
DRY REF GAS FLOWRATE	15.41 Rm^3/s
DRY ADJ GAS FLOWRATE	19.57 Rm^3/s
WET REF GAS FLOWRATE	18.32 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.606 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	December 2, 2021	**Operator:**	DU

Pitot Factor	0.846	**Filter (mg)**	0		
DGMCF	1	**Probe (mg)**	0		
Barometric Pressure	29.16 "Hg	**CWTR (g)**	620.2		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	17.2		
Nozzle	0.2511 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.35 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.33
CO2%	10.85
COppm	9.2

Measured H2O
15.8 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	59.86	0.83	280	65	68	67	1.6	7.5		19.25	
	5	63.20	0.85	280	58	67	66	1.8	7.0		19.48	**88.1**
2	10	66.96	0.85	281	55	67	66	1.8	7.0		19.49	**98.2**
	15	70.68	0.84	281	54	67	67	1.8	7.0		19.38	**97.3**
3	20	74.36	0.77	280	52	68	68	1.6	6.5		18.54	**96.7**
	25	77.88	0.78	280	51	68	67	1.7	7.0		18.66	**96.3**
4	30	81.53	0.71	280	50	69	67	1.7	7.0		17.80	**99.3**
	35	85.03	0.71	280	50	70	67	1.4	6.0		17.80	**99.7**
5	40	88.39	0.68	280	50	70	67	1.4	6.0		17.42	**95.6**
	45	91.56	0.69	279	50	70	68	1.5	6.0		17.54	**92.1**
6	50	94.94	0.62	280	50	71	68	1.2	5.5		16.64	**97.4**
	55	98.05	0.66	281	49	71	68	1.3	6.0		17.18	**94.5**
7	60	101.21	0.76	281	51	71	68	1.6	6.5		18.43	**93.1**
	65	104.70	0.74	283	49	71	68	1.6	6.5		18.21	**95.9**
8	70	108.21	0.73	283	49	71	68	1.6	6.5		18.09	**97.9**
	75	111.72	0.75	283	50	71	69	1.6	6.5		18.33	**98.5**
9	80	115.20	0.75	283	50	71	68	1.6	6.5		18.33	**96.3**
	85	118.72	0.75	283	50	70	68	1.6	7.0		18.33	**97.5**
10	90	122.25	0.79	283	51	71	68	1.6	7.0		18.82	**97.9**
	95	125.78	0.77	283	50	71	68	1.6	7.0		18.58	**95.3**
11	100	129.32	0.66	283	50	71	68	1.3	6.0		17.20	**96.8**
	105	132.55	0.65	283	50	70	68	1.3	6.0		17.07	**95.3**
12	110	135.76	0.64	283	50	70	68	1.3	6.0		16.94	**95.5**
	115	138.84	0.71	283	49	71	69	1.4	6.0		17.84	**92.4**
	120	142.10								0.35		**92.7**
1	0	142.45	0.68	280	53	70	69	1.4	6.0		17.42	
	5	145.72	0.89	283	52	69	68	1.8	7.0		19.97	**94.9**
2	10	149.41	0.9	283	52	69	68	1.9	7.0		20.08	**94.0**
	15	153.22	0.91	283	52	69	68	1.9	7.0		20.20	**96.6**
3	20	157.05	0.87	284	54	70	68	1.8	8.0		19.76	**96.6**

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	December 2, 2021	**Operator:**	DU

Pitot Factor	0.846	**Filter (mg)**	0		
DGMCF	1	**Probe (mg)**	0		
Barometric Pressure	29.16 "Hg	**CWTR (g)**	620.2		
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	17.2		
Nozzle	0.2511 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.35 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.33
CO2%	10.85
COppm	9.2

Measured H2O
15.8 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	25	160.81	0.83	284	56	70	68	1.7	8.0		19.30	**96.9**
4	30	164.48	0.86	284	54	69	68	1.8	8.0		19.65	**96.8**
	35	168.19	0.85	285	56	70	68	1.8	8.0		19.54	**96.3**
5	40	171.87	0.72	286	54	70	68	1.5	7.0		18.00	**96.0**
	45	175.29	0.74	286	51	70	68	1.6	7.0		18.25	**96.9**
6	50	178.70	0.66	286	50	70	69	1.3	7.0		17.23	**95.4**
	55	181.96	0.63	285	49	70	69	1.3	6.5		16.83	**96.4**
7	60	185.19	0.67	284	48	71	69	1.4	6.5		17.34	**97.7**
	65	188.41	0.69	284	48	71	69	1.4	6.5		17.60	**94.3**
8	70	191.67	0.65	284	48	72	69	1.4	6.5		17.08	**94.1**
	75	194.94	0.67	283	48	72	69	1.4	6.5		17.33	**97.1**
9	80	198.21	0.68	282	48	72	69	1.4	6.5		17.45	**95.6**
	85	201.50	0.69	282	48	72	69	1.5	6.5		17.57	**95.4**
10	90	204.86	0.7	282	48	72	69	1.5	7.0		17.70	**96.8**
	95	208.23	0.7	281	48	72	69	1.5	7.0		17.69	**96.3**
11	100	211.57	0.61	281	48	72	69	1.3	7.0		16.51	**95.4**
	105	214.78	0.57	281	48	72	70	1.2	6.0		15.96	**98.2**
12	110	217.81	0.55	281	48	70	70	1.1	6.0		15.68	**95.8**
	115	220.78	0.64	281	50	72	70	1.3	6.5		16.91	**95.7**
	120	223.95										**94.6**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	1 - SVOC
Date:	December 9, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.844
DGM CORRECTION FACTOR	1.026
NOZZLE DIAMETER	6.36 mm
DRY REF GAS VOLUME SAMPLED	5.013 m^3
AVGERGE ISOKINETICITY	99.2 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	141.5 °C
AVERAGE GAS MOISTURE BY VOLUME	15.1 %
AVERAGE GAS VELOCITY	18.51 m/s
BAROMETRIC PRESSURE (Station)	101.355 Kpa
STATIC PRESSURE	-2.465 Kpa
ABSOLUTE GAS PRESSURE	98.890 Kpa
OXYGEN CONCENTRATION	8.95 %
CARBON DIOXIDE CONCENTRATION	10.83 %
CARBON MONOXIDE CONCENTRATION	8.8 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.35 m^3/s
DRY REF GAS FLOWRATE	16.29 Rm^3/s
DRY ADJ GAS FLOWRATE	19.67 Rm^3/s
WET REF GAS FLOWRATE	19.20 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		5.013 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	December 9, 2021	**Operator:**	TT

Pitot Factor	0.844	**Filter (mg)**	0		
DGMCF	1.026	**Probe (mg)**	0		
Barometric Pressure	29.93 "Hg	**CWTR (g)**	641.1		
Static Pressure	-9.900 "H_2O	**WCBDA (g)**	14.7		
Nozzle	0.2505 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.36 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.95
CO2%	10.83
COppm	8.8

Measured H2O
15.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	6.66	1.1	285	62	69	71	2.5	9.0		21.84	
	5	10.90	1.1	287	49	70	74	2.45	9.5		21.87	**101.0**
2	10	15.21	1.1	288	48	70	76	2.35	9.5		21.88	**102.4**
	15	19.44	1.1	288	48	71	77	2.3	9.5		21.88	**100.4**
3	20	23.63	0.95	288	49	71	78	2	9.0		20.33	**99.2**
	25	27.54	0.91	288	49	72	79	1.9	9.0		19.90	**99.5**
4	30	31.31	0.84	287	49	72	80	1.8	8.5		19.11	**97.8**
	35	35.01	0.8	286	50	73	81	1.75	8.0		18.63	**99.7**
5	40	38.62	0.74	286	50	73	81	1.6	8.0		17.92	**99.4**
	45	42.04	0.76	286	50	74	82	1.7	8.0		18.16	**97.9**
6	50	45.54	0.7	287	50	74	82	1.5	7.5		17.44	**98.7**
	55	48.84	0.7	287	50	74	82	1.5	7.5		17.44	**97.0**
7	60	52.12	0.7	287	50	74	82	1.6	8.0		17.44	**96.4**
	65	55.50	0.73	287	50	74	82	1.6	8.0		17.81	**99.4**
8	70	58.88	0.73	287	50	74	82	1.6	8.0		17.81	**97.3**
	75	62.30	0.75	287	50	74	82	1.65	8.0		18.06	**98.4**
9	80	65.78	0.82	287	50	74	82	1.8	9.0		18.88	**98.8**
	85	69.46	0.82	287	50	74	82	1.8	9.0		18.88	**100.0**
10	90	73.15	0.83	286	50	74	82	1.8	9.0		18.98	**100.3**
	95	76.84	0.76	287	50	74	82	1.65	9.0		18.18	**99.6**
11	100	80.38	0.68	286	50	75	82	1.5	8.5		17.18	**99.9**
	105	83.77	0.7	285	50	75	82	1.5	8.5		17.42	**100.9**
12	110	87.13	0.52	285	51	75	83	1.1	8.0		15.01	**98.5**
	115	90.05	0.52	285	51	75	83	1.1	8.0		15.01	**99.1**
	120	92.96								0.36		**98.8**
1	0	93.32	0.89	287	60	74	79	1.9	9.5		19.67	
	5	97.04	0.9	287	50	74	80	1.9	9.5		19.78	**97.3**
2	10	100.84	0.92	287	47	74	81	2	9.5		20.00	**98.8**
	15	104.70	0.94	287	47	75	81	2.05	10.0		20.21	**99.2**
3	20	108.63	0.91	287	46	75	82	1.95	10.0		19.89	**99.8**

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	December 9, 2021	**Operator:**	TT

Pitot Factor	0.844	**Filter (mg)**	0		
DGMCF	1.026	**Probe (mg)**	0		
Barometric Pressure	29.93 "Hg	**CWTR (g)**	641.1		
Static Pressure	-9.900 "H_2O	**WCBDA (g)**	14.7		
Nozzle	0.2505 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.36 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.95
CO2%	10.83
COppm	8.8

Measured H2O
15.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	25	112.48	0.94	287	47	75	82	2.05	10.0		20.21	**99.2**
4	30	116.39	0.87	288	47	75	82	1.8	9.0		19.46	**99.2**
	35	120.11	0.85	288	48	75	82	1.8	9.0		19.23	**98.1**
5	40	123.86	0.76	288	48	75	83	1.6	8.5		18.19	**100.1**
	45	127.28	0.75	288	48	76	83	1.6	8.5		18.07	**96.4**
6	50	130.77	0.66	287	49	76	83	1.45	8.5		16.94	**98.9**
	55	134.06	0.67	286	49	76	84	1.45	8.5		17.05	**99.3**
7	60	137.35	0.73	287	49	76	84	1.6	9.0		17.81	**98.4**
	65	140.75	0.76	287	49	76	84	1.7	9.0		18.18	**97.5**
8	70	144.28	0.75	288	50	77	84	1.65	9.0		18.07	**99.2**
	75	147.80	0.75	287	49	77	84	1.65	9.0		18.06	**99.6**
9	80	151.30	0.74	287	50	77	84	1.65	9.0		17.93	**98.9**
	85	154.82	0.7	287	50	77	84	1.55	9.0		17.44	**100.2**
10	90	158.28	0.73	286	50	77	85	1.65	9.0		17.80	**101.2**
	95	161.82	0.75	285	50	77	85	1.65	9.0		18.03	**101.3**
11	100	165.36	0.74	285	50	77	85	1.65	9.0		17.91	**99.8**
	105	168.87	0.74	285	50	77	85	1.65	9.0		17.91	**99.7**
12	110	172.38	0.64	285	50	77	85	1.4	9.0		16.66	**99.7**
	115	175.68	0.66	285	51	78	85	1.45	9.0		16.91	**100.7**
	120	179.05										**101.2**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	2- SVOC
Date:	December 9, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.844
DGM CORRECTION FACTOR	1.026
NOZZLE DIAMETER	6.36 mm
DRY REF GAS VOLUME SAMPLED	5.068 m^3
AVGERGE ISOKINETICITY	99.6 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	141.8 °C
AVERAGE GAS MOISTURE BY VOLUME	15.0 %
AVERAGE GAS VELOCITY	18.69 m/s
BAROMETRIC PRESSURE (Station)	101.118 Kpa
STATIC PRESSURE	-2.465 Kpa
ABSOLUTE GAS PRESSURE	98.652 Kpa
OXYGEN CONCENTRATION	8.83 %
CARBON DIOXIDE CONCENTRATION	10.83 %
CARBON MONOXIDE CONCENTRATION	11.5 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.62 m^3/s
DRY REF GAS FLOWRATE	16.43 Rm^3/s
DRY ADJ GAS FLOWRATE	20.03 Rm^3/s
WET REF GAS FLOWRATE	19.32 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		5.068 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant: Covanta DYEC
Test No.: 2- SVOC
Date: December 9, 2021

Plant Location: Courtice, ON
Test Location: APC Outlet No. 2
Operator: CB

Pitot Factor	0.844	**Filter (mg)**	0		
DGMCF	1.026	**Probe (mg)**	0		
Barometric Pressure	29.86 "Hg	**CWTR (g)**	638.5		
Static Pressure	-9.900 "H_2O	**WCBDA (g)**	17.6		
Nozzle	0.2505 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.37 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.83
CO2%	10.83
COppm	11.5

Measured H2O
15.0 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	80.32	1.05	288	73	75	77	2.2	9.5		21.40	
	5	84.38	1.05	288	59	75	79	2.2	11.0		21.40	**97.8**
2	10	88.50	1.05	289	55	75	81	2.2	11.0		21.41	**99.0**
	15	92.63	1.05	289	53	76	82	2.2	11.0		21.41	**99.2**
3	20	96.77	0.95	289	52	76	82	2.05	10.0		20.37	**99.2**
	25	100.73	1.05	289	51	76	83	2.2	11.0		21.41	**99.7**
4	30	104.87	0.93	290	51	77	83	2	10.0		20.17	**99.1**
	35	108.80	0.9	290	51	77	84	1.95	10.0		19.84	**99.9**
5	40	112.62	0.83	290	51	77	84	1.8	9.5		19.05	**98.6**
	45	116.32	0.79	291	52	78	85	1.75	9.5		18.60	**99.4**
6	50	119.96	0.67	290	52	78	85	1.5	9.0		17.12	**100.1**
	55	123.33	0.72	290	52	78	85	1.6	9.0		17.74	**100.5**
7	60	126.82	0.75	290	52	78	86	1.65	9.0		18.11	**100.4**
	65	130.34	0.75	290	52	78	86	1.65	9.0		18.11	**99.2**
8	70	133.85	0.87	290	52	79	86	1.9	10.0		19.50	**98.9**
	75	137.63	0.86	290	52	79	86	1.9	10.0		19.39	**98.9**
9	80	141.45	0.84	290	51	79	86	1.9	10.0		19.17	**100.5**
	85	145.25	0.86	290	50	79	86	1.9	10.0		19.39	**101.1**
10	90	149.08	0.83	289	50	79	86	1.8	10.0		19.04	**100.8**
	95	152.81	0.85	289	50	79	86	1.9	10.0		19.27	**99.8**
11	100	156.61	0.65	281	50	79	86	1.5	9.0		16.76	**100.5**
	105	159.99	0.55	285	51	79	86	1.2	8.0		15.46	**101.6**
12	110	162.98	0.58	284	52	79	87	1.3	8.5		15.86	**97.9**
	115	166.11	0.58	284	51	79	87	1.3	8.5		15.86	**99.6**
	120	169.28								0.37		**100.9**
1	0	169.65	0.9	287	67	78	82	1.9	10.0		19.80	
	5	173.25	0.9	286	53	79	84	1.9	10.0		19.78	**92.8**
2	10	177.15	0.9	286	52	78	84	1.9	10.0		19.78	**100.2**
	15	180.92	0.9	286	52	78	84	1.9	10.0		19.78	**97.0**
3	20	184.73	0.88	286	52	78	84	1.9	10.0		19.56	**98.0**

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2- SVOC	**Test Location:**	APC Outlet No. 2
Date:	December 9, 2021	**Operator:**	CB

Pitot Factor	0.844	**Filter (mg)**	0		
DGMCF	1.026	**Probe (mg)**	0		
Barometric Pressure	29.86 "Hg	**CWTR (g)**	638.5		
Static Pressure	-9.900 "H_2O	**WCBDA (g)**	17.6		
Nozzle	0.2505 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.37 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.83
CO2%	10.83
COppm	11.5

Measured H2O
15.0 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	25	188.48	0.88	285	53	78	84	1.9	10.0		19.55	**97.5**
4	30	192.31	0.82	285	51	78	84	1.8	10.0		18.87	**99.5**
	35	196.07	0.82	285	50	78	84	1.8	10.0		18.87	**101.2**
5	40	199.76	0.73	285	49	78	85	1.7	10.0		17.81	**99.3**
	45	203.34	0.76	285	49	78	85	1.7	10.0		18.17	**102.0**
6	50	206.91	0.66	285	49	78	86	1.5	9.5		16.93	**99.7**
	55	210.30	0.66	285	49	78	86	1.5	9.5		16.93	**101.4**
7	60	213.71	0.76	286	50	78	86	1.7	9.5		18.18	**102.0**
	65	217.30	0.76	286	50	78	86	1.7	9.5		18.18	**100.2**
8	70	220.90	0.74	286	50	79	86	1.6	9.5		17.94	**100.5**
	75	224.40	0.76	286	50	79	86	1.6	9.5		18.18	**98.9**
9	80	227.87	0.77	286	51	79	87	1.65	9.5		18.30	**96.8**
	85	231.45	0.77	286	51	79	87	1.65	9.5		18.30	**99.1**
10	90	234.97	0.81	286	51	79	87	1.8	10.0		18.77	**97.4**
	95	238.64	0.81	286	51	79	87	1.8	10.0		18.77	**99.1**
11	100	242.30	0.75	287	51	79	87	1.65	10.0		18.07	**98.8**
	105	245.83	0.75	287	51	79	86	1.65	10.0		18.07	**99.1**
12	110	249.37	0.63	287	51	79	87	1.5	9.5		16.56	**99.5**
	115	252.72	0.6	287	52	79	86	1.35	9.5		16.16	**102.6**
	120	256.05										**104.5**

ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	3- SVOC
Date:	December 10, 2021

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.844
DGM CORRECTION FACTOR	1.026
NOZZLE DIAMETER	6.36 mm
DRY REF GAS VOLUME SAMPLED	5.051 m^3
AVGERGE ISOKINETICITY	100.4 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	141.6 °C
AVERAGE GAS MOISTURE BY VOLUME	15.3 %
AVERAGE GAS VELOCITY	18.65 m/s
BAROMETRIC PRESSURE (Station)	100.508 Kpa
STATIC PRESSURE	-2.465 Kpa
ABSOLUTE GAS PRESSURE	98.043 Kpa
OXYGEN CONCENTRATION	8.78 %
CARBON DIOXIDE CONCENTRATION	10.83 %
CARBON MONOXIDE CONCENTRATION	8.1 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.56 m^3/s
DRY REF GAS FLOWRATE	16.23 Rm^3/s
DRY ADJ GAS FLOWRATE	19.87 Rm^3/s
WET REF GAS FLOWRATE	19.17 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		5.051 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^3
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.000000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3- SVOC	**Test Location:**	APC Outlet No. 2
Date:	December 10, 2021	**Operator:**	JG

Pitot Factor	0.844	**Filter (mg)**	0		
DGMCF	1.026	**Probe (mg)**	0		
Barometric Pressure	29.68 "Hg	**CWTR (g)**	654.7		
Static Pressure	-9.900 "H_2O	**WCBDA (g)**	18.2		
Nozzle	0.2505 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.45 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.78
CO2%	10.83
COppm	8.1

Measured H2O
15.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
1	0	56.80	1	286	68	82	84	2.1	8.0		20.94	
	5	60.79	1	287	49	82	87	2.3	8.0		20.95	**97.1**
2	10	64.97	1.1	288	46	83	89	2.4	8.0		21.99	**101.6**
	15	69.24	1.1	289	46	83	91	2.5	8.0		22.00	**98.7**
3	20	73.70	0.95	288	46	84	92	2.2	8.0		20.43	**103.0**
	25	77.81	0.95	288	47	85	93	2.1	8.0		20.43	**101.8**
4	30	81.85	0.85	287	47	85	93	1.9	8.0		19.32	**99.9**
	35	85.68	0.85	288	48	85	94	1.9	8.0		19.33	**100.0**
5	40	89.47	0.76	287	48	86	95	1.6	7.0		18.26	**98.9**
	45	92.97	0.75	286	49	87	96	1.7	7.0		18.13	**96.3**
6	50	96.62	0.66	285	49	87	97	1.3	7.0		17.00	**100.9**
	55	99.92	0.66	284	50	88	97	1.5	7.0		16.99	**97.0**
7	60	103.25	0.75	284	49	88	98	1.9	7.0		18.11	**97.8**
	65	107.07	0.73	284	47	88	98	1.7	7.0		17.86	**105.2**
8	70	110.70	0.75	284	47	89	99	1.8	7.0		18.11	**101.3**
	75	114.47	0.8	284	46	90	99	1.8	7.0		18.70	**103.6**
9	80	118.22	0.77	285	46	90	100	1.7	7.0		18.36	**99.7**
	85	121.84	0.8	285	46	91	100	1.8	8.0		18.71	**98.1**
10	90	125.75	0.8	285	46	91	101	1.8	8.0		18.71	**103.8**
	95	129.38	0.8	285	47	92	101	1.9	8.0		18.71	**96.3**
11	100	133.23	0.67	285	47	92	101	1.5	8.0		17.13	**102.1**
	105	136.73	0.7	284	46	92	101	1.5	8.0		17.49	**101.3**
12	110	140.18	0.67	283	48	92	102	1.5	8.0		17.10	**97.6**
	115	143.63	0.43	283	48	93	102	0.99	8.0		13.70	**99.6**
	120	146.44								0.45		**101.1**
1	0	146.89	0.95	285	62	93	98	2.1	9.0		20.39	
	5	150.95	0.99	287	49	93	100	2.2	9.0		20.85	**99.0**
2	10	155.16	0.99	287	46	93	101	2.2	10.0		20.85	**100.6**
	15	159.40	0.99	288	46	93	101	2.2	10.0		20.86	**101.2**
3	20	163.65	0.91	288	46	93	101	2	10.0		20.00	**101.5**

ORTECH Consulting Inc.

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3- SVOC	**Test Location:**	APC Outlet No. 2
Date:	December 10, 2021	**Operator:**	JG

Pitot Factor	0.844	**Filter (mg)**	0		
DGMCF	1.026	**Probe (mg)**	0		
Barometric Pressure	29.68 "Hg	**CWTR (g)**	654.7		
Static Pressure	-9.900 "H_2O	**WCBDA (g)**	18.2		
Nozzle	0.2505 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.45 ft^3	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.78
CO2%	10.83
COppm	8.1

Measured H2O
15.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	25	167.65	0.95	288	47	94	102	2.1	10.0		20.43	**99.6**
4	30	171.76	0.95	289	47	94	102	2.1	10.0		20.45	**100.0**
	35	175.87	0.85	289	47	94	102	1.8	10.0		19.34	**100.1**
5	40	179.80	0.8	290	48	94	103	1.8	10.0		18.78	**101.1**
	45	183.62	0.8	290	48	94	103	1.8	10.0		18.78	**101.2**
6	50	187.43	0.68	290	49	95	103	1.5	9.0		17.31	**101.0**
	55	190.95	0.68	290	49	95	103	1.5	9.0		17.31	**101.0**
7	60	194.47	0.72	290	49	95	104	1.7	9.0		17.81	**101.0**
	65	198.12	0.7	290	50	95	104	1.6	9.0		17.56	**101.8**
8	70	201.72	0.7	289	50	95	104	1.6	9.0		17.55	**101.8**
	75	205.35	0.72	289	50	95	104	1.6	9.0		17.80	**102.5**
9	80	208.91	0.75	288	50	96	104	1.8	9.0		18.16	**99.2**
	85	212.70	0.75	287	50	96	104	1.6	9.0		18.14	**103.3**
10	90	216.37	0.7	287	51	96	104	1.5	9.0		17.53	**99.9**
	95	219.87	0.7	287	51	96	104	1.6	9.0		17.53	**98.6**
11	100	223.43	0.68	286	51	96	105	1.6	9.0		17.26	**100.3**
	105	226.99	0.7	287	52	96	105	1.6	9.0		17.53	**101.6**
12	110	230.52	0.68	287	52	96	105	1.6	9.0		17.28	**99.4**
	115	234.05	0.68	287	52	96	105	1.6	9.0		17.28	**100.9**
	120	237.59										**101.1**

APPENDIX 26

ORTECH Total Hydrocarbon CEM Data
(4 pages)

Covanta - Durham York Energy Centre
Total Hydrocarbon Sampling at the Boiler No. 1 Quench Inlet

Test No. 1 November 29, 2021			Test No. 2 November 29, 2021			Test No. 3 November 29, 2021		
Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry	Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry	Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
14:43	0.0		15:50	0.0		16:57	0.0	
14:44	0.2		15:51	0.0		16:58	0.0	
14:45	0.1		15:52	0.0		16:59	0.0	
14:46	0.0		15:53	0.0		17:00	0.0	
14:47	0.0		15:54	0.0		17:01	0.0	
14:48	0.0		15:55	0.0		17:02	0.0	
14:49	0.0		15:56	0.0		17:03	0.0	
14:50	0.0		15:57	0.0		17:04	0.0	
14:51	0.0		15:58	0.1		17:05	0.0	
14:52	0.0	0.0	15:59	0.1	0.0	17:06	0.0	0.0
14:53	0.0	0.0	16:00	0.0	0.0	17:07	0.0	0.0
14:54	0.0	0.0	16:01	0.0	0.0	17:08	0.0	0.0
14:55	0.0	0.0	16:02	0.0	0.0	17:09	0.0	0.0
14:56	0.0	0.0	16:03	0.1	0.0	17:10	0.0	0.0
14:57	0.0	0.0	16:04	0.1	0.0	17:11	0.0	0.0
14:58	0.0	0.0	16:05	0.0	0.0	17:12	0.0	0.0
14:59	0.0	0.0	16:06	0.1	0.0	17:13	0.0	0.0
15:00	0.0	0.0	16:07	0.0	0.0	17:14	0.0	0.0
15:01	0.0	0.0	16:08	0.0	0.0	17:15	0.0	0.0
15:02	0.0	0.0	16:09	0.0	0.0	17:16	0.0	0.0
15:03	0.0	0.0	16:10	0.1	0.0	17:17	0.0	0.0
15:04	0.0	0.0	16:11	0.0	0.0	17:18	0.0	0.0
15:05	0.0	0.0	16:12	0.0	0.0	17:19	0.0	0.0
15:06	0.0	0.0	16:13	0.0	0.0	17:20	0.0	0.0
15:07	0.0	0.0	16:14	0.0	0.0	17:21	0.0	0.0
15:08	0.0	0.0	16:15	0.0	0.0	17:22	0.0	0.0
15:09	0.0	0.0	16:16	0.1	0.0	17:23	0.0	0.0
15:10	0.0	0.0	16:17	0.0	0.0	17:24	0.0	0.0
15:11	0.0	0.0	16:18	0.0	0.0	17:25	0.0	0.0
15:12	0.0	0.0	16:19	0.2	0.0	17:26	0.0	0.0
15:13	0.0	0.0	16:20	0.0	0.0	17:27	0.0	0.0
15:14	0.0	0.0	16:21	0.0	0.0	17:28	0.5	0.1
15:15	0.0	0.0	16:22	0.1	0.0	17:29	0.0	0.1
15:16	0.0	0.0	16:23	0.1	0.1	17:30	0.0	0.1
15:17	0.0	0.0	16:24	0.0	0.0	17:31	0.0	0.1
15:18	0.0	0.0	16:25	0.1	0.1	17:32	0.0	0.1
15:19	0.0	0.0	16:26	0.1	0.1	17:33	0.0	0.1
15:20	0.0	0.0	16:27	0.0	0.1	17:34	0.0	0.1
15:21	0.0	0.0	16:28	0.0	0.1	17:35	0.0	0.1
15:22	0.0	0.0	16:29	0.1	0.0	17:36	0.0	0.1
15:23	0.0	0.0	16:30	0.0	0.0	17:37	0.0	0.1
15:24	0.0	0.0	16:31	0.0	0.0	17:38	0.0	0.0
15:25	0.0	0.0	16:32	0.0	0.0	17:39	0.0	0.0
15:26	0.0	0.0	16:33	0.0	0.0	17:40	0.0	0.0
15:27	0.0	0.0	16:34	0.0	0.0	17:41	0.0	0.0
15:28	0.0	0.0	16:35	0.0	0.0	17:42	0.0	0.0
15:29	0.0	0.0	16:36	0.1	0.0	17:43	0.0	0.0
15:30	0.0	0.0	16:37	0.0	0.0	17:44	0.0	0.0
15:31	0.0	0.0	16:38	0.0	0.0	17:45	0.0	0.0
15:32	0.0	0.0	16:39	0.0	0.0	17:46	0.0	0.0
15:33	0.0	0.0	16:40	0.1	0.0	17:47	0.0	0.0
15:34	0.0	0.0	16:41	0.2	0.0	17:48	0.0	0.0
15:35	0.0	0.0	16:42	0.0	0.0	17:49	0.0	0.0
15:36	0.0	0.0	16:43	0.0	0.0	17:50	0.0	0.0
15:37	0.0	0.0	16:44	0.0	0.1	17:51	0.0	0.0
15:38	0.0	0.0	16:45	0.0	0.1	17:52	0.0	0.0
15:39	0.0	0.0	16:46	0.1	0.0	17:53	0.0	0.0
15:40	0.0	0.0	16:47	0.5	0.1	17:54	0.0	0.0
15:41	0.0	0.0	16:48	0.0	0.1	17:55	0.0	0.0
15:42	0.0	0.0	16:49	0.0	0.1	17:56	0.0	0.0
15:43	0.0	0.0	16:50	0.0	0.1	17:57	0.0	0.0
Min	0.0	0.0	Min	0.0	0.0	Min	0.0	0.0
Max	0.2	0.0	Max	0.5	0.1	Max	0.5	0.1
Avg	0.0	0.0	Avg	0.0	0.0	Avg	0.0	0.0

Covanta - Durham York Energy Centre
Total Hydrocarbon Sampling at the Boiler No. 1 APC Outlet

Test No. 1 November 29, 2021		
Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
14:43	0.0	
14:44	0.2	
14:45	0.2	
14:46	0.2	
14:47	0.2	
14:48	0.2	
14:49	0.3	
14:50	0.3	
14:51	0.3	
14:52	0.2	0.2
14:53	0.2	0.2
14:54	0.2	0.2
14:55	0.3	0.3
14:56	0.3	0.3
14:57	0.3	0.3
14:58	0.2	0.3
14:59	0.2	0.3
15:00	0.3	0.3
15:01	0.3	0.3
15:02	0.3	0.3
15:03	0.3	0.3
15:04	0.3	0.3
15:05	0.3	0.3
15:06	0.3	0.3
15:07	0.3	0.3
15:08	0.3	0.3
15:09	0.3	0.3
15:10	0.3	0.3
15:11	0.3	0.3
15:12	0.3	0.3
15:13	0.3	0.3
15:14	0.3	0.3
15:15	0.3	0.3
15:16	0.3	0.3
15:17	0.3	0.3
15:18	0.2	0.3
15:19	0.2	0.3
15:20	0.2	0.3
15:21	0.2	0.3
15:22	0.2	0.3
15:23	0.2	0.2
15:24	0.2	0.2
15:25	0.2	0.2
15:26	0.1	0.2
15:27	0.2	0.2
15:28	0.1	0.2
15:29	0.2	0.2
15:30	0.2	0.2
15:31	0.2	0.2
15:32	0.1	0.2
15:33	0.2	0.2
15:34	0.2	0.2
15:35	0.2	0.2
15:36	0.2	0.2
15:37	0.2	0.2
15:38	0.2	0.2
15:39	0.2	0.2
15:40	0.1	0.2
15:41	0.1	0.2
15:42	0.1	0.2
15:43	0.1	0.1
Min	0.0	0.1
Max	0.3	0.3
Avg	0.2	0.2

Test No. 2 November 29, 2021		
Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
15:50	0.1	
15:51	0.1	
15:52	0.1	
15:53	0.1	
15:54	0.1	
15:55	0.1	
15:56	0.0	
15:57	0.0	
15:58	0.0	
15:59	0.0	0.1
16:00	0.0	0.1
16:01	0.0	0.0
16:02	0.0	0.0
16:03	0.0	0.0
16:04	0.2	0.0
16:05	0.2	0.0
16:06	0.2	0.1
16:07	0.2	0.1
16:08	0.2	0.1
16:09	0.2	0.1
16:10	0.2	0.1
16:11	0.2	0.2
16:12	0.2	0.2
16:13	0.3	0.2
16:14	0.2	0.2
16:15	0.2	0.2
16:16	0.2	0.2
16:17	0.2	0.2
16:18	0.1	0.2
16:19	0.2	0.2
16:20	0.2	0.2
16:21	0.2	0.2
16:22	0.2	0.2
16:23	0.2	0.2
16:24	0.3	0.2
16:25	0.2	0.2
16:26	0.2	0.2
16:27	0.2	0.2
16:28	0.2	0.2
16:29	0.2	0.2
16:30	0.2	0.2
16:31	0.2	0.2
16:32	0.1	0.2
16:33	0.2	0.2
16:34	0.2	0.2
16:35	0.1	0.2
16:36	0.1	0.2
16:37	0.0	0.1
16:38	0.0	0.1
16:39	0.0	0.1
16:40	0.0	0.1
16:41	0.0	0.1
16:42	0.0	0.0
16:43	0.0	0.0
16:44	0.0	0.0
16:45	0.0	0.0
16:46	0.0	0.0
16:47	0.2	0.0
16:48	0.3	0.1
16:49	0.3	0.1
16:50	0.3	0.1
Min	0.0	0.0
Max	0.3	0.2
Avg	0.1	0.1

Test No. 3 November 29, 2021		
Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
16:57	0.4	
16:58	0.3	
16:59	0.3	
17:00	0.3	
17:01	0.3	
17:02	0.3	
17:03	0.2	
17:04	0.3	
17:05	0.2	
17:06	0.2	0.3
17:07	0.2	0.3
17:08	0.2	0.3
17:09	0.3	0.3
17:10	0.3	0.3
17:11	0.2	0.2
17:12	0.2	0.2
17:13	0.2	0.2
17:14	0.1	0.2
17:15	0.1	0.2
17:16	0.1	0.2
17:17	0.1	0.2
17:18	0.1	0.2
17:19	0.1	0.2
17:20	0.0	0.1
17:21	0.1	0.1
17:22	0.1	0.1
17:23	0.1	0.1
17:24	0.0	0.1
17:25	0.1	0.1
17:26	0.1	0.1
17:27	0.2	0.1
17:28	0.2	0.1
17:29	0.1	0.1
17:30	0.1	0.1
17:31	0.1	0.1
17:32	0.1	0.1
17:33	0.1	0.1
17:34	0.0	0.1
17:35	0.0	0.1
17:36	0.1	0.1
17:37	0.1	0.1
17:38	0.0	0.1
17:39	0.0	0.1
17:40	0.1	0.1
17:41	0.0	0.1
17:42	0.0	0.0
17:43	0.0	0.0
17:44	0.1	0.0
17:45	0.1	0.0
17:46	0.0	0.0
17:47	0.0	0.0
17:48	0.0	0.0
17:49	0.0	0.0
17:50	0.0	0.0
17:51	0.0	0.0
17:52	0.0	0.0
17:53	0.0	0.0
17:54	0.0	0.0
17:55	0.0	0.0
17:56	0.0	0.0
17:57	0.0	0.0
Min	0.0	0.0
Max	0.4	0.3
Avg	0.1	0.1

Covanta - Durham York Energy Centre
Total Hydrocarbon Sampling at the Boiler No. 2 Quench Inlet

Test No. 1 November 28, 2021			Test No. 2 November 29, 2021			Test No. 3 November 29, 2021		
Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry	Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry	Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
22:10	0.1		11:20	0.0		12:26	0.5	
22:11	0.2		11:21	0.0		12:27	0.1	
22:12	0.0		11:22	0.0		12:28	0.0	
22:13	0.0		11:23	0.0		12:29	0.0	
22:14	0.0		11:24	0.0		12:30	0.0	
22:15	0.0		11:25	0.0		12:31	0.0	
22:16	0.2		11:26	0.0		12:32	0.0	
22:17	0.1		11:27	0.0		12:33	0.0	
22:18	0.1		11:28	0.0		12:34	0.0	
22:19	0.2	0.1	11:29	0.0	0.0	12:35	0.0	0.1
22:20	0.1	0.1	11:30	0.0	0.0	12:36	0.0	0.0
22:21	0.3	0.1	11:31	0.0	0.0	12:37	0.0	0.0
22:22	0.2	0.1	11:32	0.0	0.0	12:38	0.2	0.0
22:23	0.1	0.1	11:33	0.0	0.0	12:39	0.1	0.0
22:24	0.1	0.1	11:34	0.0	0.0	12:40	0.0	0.0
22:25	0.1	0.1	11:35	0.0	0.0	12:41	0.0	0.0
22:26	0.2	0.1	11:36	0.0	0.0	12:42	0.0	0.0
22:27	0.2	0.2	11:37	0.0	0.0	12:43	0.0	0.0
22:28	0.1	0.2	11:38	0.0	0.0	12:44	0.1	0.0
22:29	0.1	0.1	11:39	0.0	0.0	12:45	0.1	0.0
22:30	0.0	0.1	11:40	0.0	0.0	12:46	0.0	0.0
22:31	0.0	0.1	11:41	0.0	0.0	12:47	0.1	0.1
22:32	0.0	0.1	11:42	0.0	0.0	12:48	0.0	0.0
22:33	0.0	0.1	11:43	0.0	0.0	12:49	0.0	0.0
22:34	0.0	0.1	11:44	0.0	0.0	12:50	0.0	0.0
22:35	0.1	0.1	11:45	0.0	0.0	12:51	0.1	0.0
22:36	0.0	0.1	11:46	0.0	0.0	12:52	0.0	0.0
22:37	0.1	0.0	11:47	0.0	0.0	12:53	0.1	0.1
22:38	0.0	0.0	11:48	0.0	0.0	12:54	0.0	0.0
22:39	0.0	0.0	11:49	0.0	0.0	12:55	0.1	0.0
22:40	0.0	0.0	11:50	0.0	0.0	12:56	0.0	0.0
22:41	0.0	0.0	11:51	0.0	0.0	12:57	0.0	0.0
22:42	0.0	0.0	11:52	0.0	0.0	12:58	0.0	0.0
22:43	0.0	0.0	11:53	0.0	0.0	12:59	0.0	0.0
22:44	0.0	0.0	11:54	0.0	0.0	13:00	0.0	0.0
22:45	0.0	0.0	11:55	0.0	0.0	13:01	0.0	0.0
22:46	0.0	0.0	11:56	0.0	0.0	13:02	0.0	0.0
22:47	0.0	0.0	11:57	0.0	0.0	13:03	0.0	0.0
22:48	0.0	0.0	11:58	0.0	0.0	13:04	0.0	0.0
22:49	0.0	0.0	11:59	0.0	0.0	13:05	0.1	0.0
22:50	0.0	0.0	12:00	0.0	0.0	13:06	0.1	0.0
22:51	0.0	0.0	12:01	0.0	0.0	13:07	0.0	0.0
22:52	0.0	0.0	12:02	0.1	0.0	13:08	0.4	0.1
22:53	0.0	0.0	12:03	0.2	0.0	13:09	0.1	0.1
22:54	0.0	0.0	12:04	0.3	0.1	13:10	0.1	0.1
22:55	0.0	0.0	12:05	0.4	0.1	13:11	0.3	0.1
22:56	0.0	0.0	12:06	0.1	0.1	13:12	0.0	0.1
22:57	0.0	0.0	12:07	0.0	0.1	13:13	0.1	0.1
22:58	0.0	0.0	12:08	0.3	0.1	13:14	0.1	0.1
22:59	0.0	0.0	12:09	0.1	0.2	13:15	0.0	0.1
23:00	0.0	0.0	12:10	0.1	0.2	13:16	0.0	0.1
23:01	0.0	0.0	12:11	0.1	0.2	13:17	0.0	0.1
23:02	0.0	0.0	12:12	0.0	0.2	13:18	0.0	0.1
23:03	0.0	0.0	12:13	0.2	0.2	13:19	0.0	0.1
23:04	0.0	0.0	12:14	0.1	0.2	13:20	0.1	0.1
23:05	0.0	0.0	12:15	0.0	0.1	13:21	0.0	0.0
23:06	0.0	0.0	12:16	0.1	0.1	13:22	0.0	0.0
23:07	0.0	0.0	12:17	0.1	0.1	13:23	0.0	0.0
23:08	0.0	0.0	12:18	0.3	0.1	13:24	0.0	0.0
23:09	0.0	0.0	12:19	0.0	0.1	13:25	0.0	0.0
23:10	0.0	0.0	12:20	0.2	0.1	13:26	0.0	0.0
Min	0.0	0.0	Min	0.0	0.0	Min	0.0	0.0
Max	0.3	0.2	Max	0.4	0.2	Max	0.5	0.1
Avg	0.0	0.0	Avg	0.0	0.0	Avg	0.0	0.0

Covanta - Durham York Energy Centre
Total Hydrocarbon Sampling at the Boiler No. 2 APC Outlet

Test No. 1 November 28, 2021			Test No. 2 November 29, 2021			Test No. 3 November 29, 2021		
Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry	Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry	Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
22:10	0.3		11:20	0.2		12:26	0.0	
22:11	0.3		11:21	0.2		12:27	0.0	
22:12	0.2		11:22	0.2		12:28	0.0	
22:13	0.2		11:23	0.3		12:29	0.0	
22:14	0.2		11:24	0.4		12:30	0.0	
22:15	0.1		11:25	0.4		12:31	0.0	
22:16	0.2		11:26	0.1		12:32	0.0	
22:17	0.2		11:27	0.0		12:33	0.0	
22:18	0.2		11:28	0.0		12:34	0.0	
22:19	0.3	0.2	11:29	0.0	0.2	12:35	0.0	0.0
22:20	0.3	0.2	11:30	0.1	0.2	12:36	0.0	0.0
22:21	0.3	0.2	11:31	0.3	0.2	12:37	0.0	0.0
22:22	0.7	0.3	11:32	0.3	0.2	12:38	0.0	0.0
22:23	0.7	0.3	11:33	0.2	0.2	12:39	0.0	0.0
22:24	0.5	0.3	11:34	0.1	0.1	12:40	0.0	0.0
22:25	0.6	0.4	11:35	0.1	0.1	12:41	0.0	0.0
22:26	0.5	0.4	11:36	0.1	0.1	12:42	0.0	0.0
22:27	0.5	0.5	11:37	0.2	0.1	12:43	0.0	0.0
22:28	0.6	0.5	11:38	0.2	0.1	12:44	0.0	0.0
22:29	0.5	0.5	11:39	0.3	0.2	12:45	0.0	0.0
22:30	0.5	0.5	11:40	0.4	0.2	12:46	0.0	0.0
22:31	0.5	0.5	11:41	0.4	0.2	12:47	0.0	0.0
22:32	0.4	0.5	11:42	0.1	0.2	12:48	0.0	0.0
22:33	0.5	0.5	11:43	0.2	0.2	12:49	0.0	0.0
22:34	0.6	0.5	11:44	0.2	0.2	12:50	0.0	0.0
22:35	0.5	0.5	11:45	0.2	0.2	12:51	0.0	0.0
22:36	0.5	0.5	11:46	0.3	0.2	12:52	0.0	0.0
22:37	0.5	0.5	11:47	0.3	0.3	12:53	0.0	0.0
22:38	0.5	0.5	11:48	0.1	0.2	12:54	0.0	0.0
22:39	0.6	0.5	11:49	0.0	0.2	12:55	0.0	0.0
22:40	0.6	0.5	11:50	0.0	0.2	12:56	0.0	0.0
22:41	0.6	0.5	11:51	0.0	0.1	12:57	0.0	0.0
22:42	0.7	0.6	11:52	0.0	0.1	12:58	0.0	0.0
22:43	0.7	0.6	11:53	0.0	0.1	12:59	0.0	0.0
22:44	0.7	0.6	11:54	0.0	0.1	13:00	0.0	0.0
22:45	0.7	0.6	11:55	0.0	0.1	13:01	0.0	0.0
22:46	0.7	0.6	11:56	0.0	0.0	13:02	0.0	0.0
22:47	0.7	0.7	11:57	0.0	0.0	13:03	0.0	0.0
22:48	0.7	0.7	11:58	0.0	0.0	13:04	0.0	0.0
22:49	0.5	0.7	11:59	0.0	0.0	13:05	0.0	0.0
22:50	0.3	0.6	12:00	0.0	0.0	13:06	0.0	0.0
22:51	0.0	0.6	12:01	0.0	0.0	13:07	0.0	0.0
22:52	0.0	0.5	12:02	0.0	0.0	13:08	0.0	0.0
22:53	0.0	0.4	12:03	0.1	0.0	13:09	0.0	0.0
22:54	0.0	0.4	12:04	0.0	0.0	13:10	0.0	0.0
22:55	0.0	0.3	12:05	0.0	0.0	13:11	0.0	0.0
22:56	0.0	0.2	12:06	0.0	0.0	13:12	0.0	0.0
22:57	0.0	0.1	12:07	0.0	0.0	13:13	0.0	0.0
22:58	0.0	0.1	12:08	0.0	0.0	13:14	0.0	0.0
22:59	0.0	0.0	12:09	0.0	0.0	13:15	0.0	0.0
23:00	0.0	0.0	12:10	0.0	0.0	13:16	0.0	0.0
23:01	0.0	0.0	12:11	0.0	0.0	13:17	0.0	0.0
23:02	0.0	0.0	12:12	0.0	0.0	13:18	0.0	0.0
23:03	0.0	0.0	12:13	0.0	0.0	13:19	0.0	0.0
23:04	0.2	0.0	12:14	0.1	0.0	13:20	0.0	0.0
23:05	0.2	0.0	12:15	0.2	0.0	13:21	0.0	0.0
23:06	0.2	0.1	12:16	0.2	0.1	13:22	0.0	0.0
23:07	0.4	0.1	12:17	0.1	0.1	13:23	0.0	0.0
23:08	0.4	0.1	12:18	0.1	0.1	13:24	0.0	0.0
23:09	0.4	0.2	12:19	0.1	0.1	13:25	0.0	0.0
23:10	0.4	0.2	12:20	0.1	0.1	13:26	0.6	0.1
Min	0.0	0.0	Min	0.0	0.0	Min	0.0	0.0
Max	0.7	0.7	Max	0.4	0.3	Max	0.6	0.1
Avg	0.4	0.4	Avg	0.1	0.1	Avg	0.0	0.0

APPENDIX 27

Dispersion Modelling Results
for the November/December 2021 Testing Program
(19 pages)

TECHNICAL MEMORANDUM

DATE February 18, 2022 **Project No.** 21452106

TO Lydia Kwan
Covanta Durham York Renewable Energy LP

CC Enoch Chan

FROM Katie Armstrong **EMAIL ksarmstrong@golder.com**

CALPUFF MODELLING FOR NOVEMBER/DECEMBER 2021 COMPLIANCE SOURCE TESTING AT DURHAM YORK ENERGY CENTRE

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1.0 INTRODUCTION

Covanta Durham York Renewable Energy LP (Covanta) operates the Durham York Energy Centre (DYEC) under the multi-media Environmental Compliance Approval (ECA) 7306-8FDKNX, as amended. The 2011 ECA application was supported with an Emission Summary and Dispersion Modelling (ESDM) Report prepared by Golder Associates Ltd (Golder) using the CALPUFF dispersion model version 6.263, with results compared to Ministry of Environment, Conservation and Parks (MECP) Point of Impingement (POI) standards listed in Schedule 3 of Ontario Regulation (O.Reg.) 419/05 as of 2011.

In 2020, MECP requested that the CALPUFF modelling for DYEC be updated to use more recent meteorological data and an updated version of the CALPUFF dispersion model. Following consultation with MECP, including their provisional review and approval of the new meteorological files and updated CALPUFF modelling input files, formal approval was requested in August 2021 under Sections 7 (1) and 13 (1) of O.Reg. 419/05 for use of a specified dispersion model (CALPUFF version 7.2.1) and site-specific meteorological data for the 2014-2018 data period. Formal approval was received in December, 2021.

Condition 7, Testing, Monitoring and Auditing, of the ECA requires annual source testing to be completed at the DYEC for over 100 contaminants as well as assessing the impact of the contaminants. According to the ECA Schedule "E" Source Testing Procedures, a source testing report is required that includes the following:

> *8. (7) the results of dispersion calculations in accordance with the O.Reg. 419/05, indicating the maximum concentration of the test contaminants, at the point of impingement.*
>
> *8. (8) an updated site wide emission source inventory to assess the aggregate point of impingement concentrations of the test contaminants.*

This memorandum summarizes the dispersion calculations/modelling results for the Compliance November/ December 2021 source testing program with the aid of the updated CALPUFF model and other input data sets as used in the 2011 ESDM Report and 2007 Environmental Assessment (EA) and compares the results to O.Reg. 419/05 Schedule 3 limits as last updated April 2018.

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2.0 EMISSION RATES

Compliance source testing was completed by Ortech Environmental in November/ December 2021 for each of the two combustion train units and results were provided to Golder on a mass per time basis. Three tests were completed for each unit and averaged. The average emission rates for each unit were then summed together to provide the total stack emission rate of each contaminant to be modelled. Where source testing results indicated that the measured concentration is below the detection limit, the full detection limit was used as the emission rate for conservatism.

Emission rates for which source testing data was available were converted to grams per second (g/s) and are provided in an updated Site-wide Emission Inventory included in Appendix A. This emission inventory includes emissions from silo filling and diesel generator testing taken from the ESDM report, in addition to source test emissions from the main stack.

In response to clarifications provided by the MECP of December 9, 2016, two different emission rates were calculated for Total Particulate Matter:

1. Filterable fraction emission rate only; and
2. Total Particulate Matter (Sum of condensable and filterable fractions).

As source testing for the condensable fraction of total particulate matter is not required pursuant to Schedule "D": of the ECA, the condensable content of PM_{10} was used.

3.0 MODELLING

In response to an MECP request in 2020, the CALPUFF modelling software and CALMET meteorological data have been updated. The MECP provided formal approval of the meteorological data and modelling input files in December 2021The following models and pre- and post-processors were used in the assessment:

- CALMET diagnostic meteorological model (v. 6.5.0, level 150223);
- CALPUFF dispersion model (v. 7.2.1, level 150618);
- CALPOST post processor (v. 7.1.0, Level 141010);
- BPIP building downwash pre-processor (v. 04274);
- POSTUTIL post processor (v.7.0.0, Level 150207).

These model versions are updates from those used in the original 2011 ESDM report. Formal approval for their use has been requested under s7(1) and s13(1) of O.Reg. 419/05 and is waiting approval. Dispersion Modelling inputs are described in the following subsections.

3.1 Model Domain

The Model domain used in this assessment was modified slightly from the 2007 Environmental Assessment (EA) and ESDM Report. It extends 40 km by 40 km and is centred approximately 5 km north of the Site. This domain covers more than the air quality study area but will ensure that plumes are tracked beyond the furthest receptor locations to ensure the worst-case ground level concentrations are considered at all receptors.

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3.2 Meteorology, Land Use and Terrain Data

The meteorology and terrain data used in this assessment were updated from those used in the 2007 Environmental Assessment (EA) and 2011 ESDM Report.

Meteorological data was updated using observation data from surface stations and large-scale mesoscale meteorological data from the Weather Research and Forecasting (WRF) model between 2014 – 2018, inclusive. The CALMET output files were submitted to MECP for review and approval prior to use in the modelling.

Terrain data was downloaded from the MECP's database of regional terrain data for modelling (MECP, 2017b) and processed using the CALPUFF pre-processor, TERREL.

3.3 Receptors

The receptors used in this assessment are similar to the receptors used in the 2011 ESDM Report but receptors at the edge of the domain were modified slightly to reflect the change in domain size. They include gridded ground level receptors to meet the requirements of O.Reg. 419/05 in addition to 400 discrete receptors to represent locations of interest, which were reviewed and updated in 2021. They include hospitals, nursing homes, schools, daycares, Senior citizen centres, the nearest residential receptors, specific watersheds and water bodies and parks.

3.4 Building Downwash

The buildings used in this assessment to represent building downwash are the same as the buildings used in the ESDM Report. Building wake effects were considered in this assessment using the U.S. EPA's Building Profile Input Program (BPIP-ISC). The inputs into this pre-processor include the coordinates and heights of the buildings and stacks. The output data from BPIP is used in the building wake effect calculations. No changes were made to the BPIP input or output file for this assessment.

3.5 Deposition

CALPUFF has the capability to account for wet and dry deposition of substances that would reduce ground level concentrations at POIs. However, the deposition algorithm has not been implemented for conservatism and to maintain consistency with the ESDM report and the previous EA for maximum POI predictions.

3.6 Thermal Internal Boundary Layer

CALPUFF contains an option to account for sub-grid coastal influences on plume dispersion such as the development of a thermal internal boundary layer (TIBL). Given the proximity of the proposed Facility to Lake Ontario (approximately 500 m) and the grid size (250 m), variations in coastline location within the grid cells near the proposed facility were accounted for in the dispersion modelling. To achieve this, a digitized sub-grid coastline, extending to the boundaries of the air quality study area was included as an additional input. This is consistent with the approach used in the ESDM report.

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3.7 Averaging Times and Conversions

CALPUFF can predict 1-hour average values. Many of the relevant Schedule 3 standards are based on a 24-hour averaging time, which is also provided by CALPUFF. Several of the modelled contaminants have averaging periods less than 1 hour. For these contaminants, the 1-hour average concentration was converted using the conversion factors listed in Table 4-1 of Air Dispersion Modelling Guidance for Ontario (ADMGO). For example, the hourly concentrations can be converted to a 10-min average by multiplying the hour value by 1.65. This is consistent with the approach used in the ESDM report.

In 2016, a number of O.Reg 419/05 standards were updated or modified to include annual average Point of Impingement (POI) limits. CALPUFF can predict annual average values, therefore the CALPOST input file was modified to provide this output in addition to outputs for the 1 hour, 24 hour and 30-day averaging periods already provided.

3.8 Chemical Transformation

For the purposes of assessing project contributions to Secondary Particulate Matter (SPM) formation, chemical transformation was considered in the CALPUFF modelling of particulate matter. To model the chemical transformation of emitted NO, NO_2 and SO_2 into HNO_3, NO_3 and SO_4, CALPUFFs RIVAD/ARM3 mechanism was used. Monthly background ozone concentrations are required to generate SPM as well as setting the MCHEM Flag to 3 for particulate matter model runs. The monthly background ozone data used are consistent with the 2007 EA, as requested by MECP, and is summarised below in Table 1.

Table 1: Background Ozone Concentrations used for Chemical Transformation Modelling(1)

Month	Ozone Concentrations (ppb)
January	13.70
February	18.50
March	24.22
April	11.09
May	32.29
June	33.63
July	16.32
August	21.33
September	12.63
October	15.39
November	17.10
December	20.91

1 – Ozone levels from Courtice Road Station (2007-2008)

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Chemical transformations were only modelled to calculate additional concentrations of particulate matter that is created as part of secondary transformations. Reported concentrations of NO_2 and SO_2 do not include the effects of depletion due to chemical transformation. The flag MCHEM is set to 0 for model runs used to produce concentrations of all other contaminants. This is consistent with the approach used in the 2011ESDM report.

3.9 Dispersion Modelling Options

The options used in the CALPUFF dispersion model are summarized in the Table 2. The model options used were reviewed in consultation with MECP but are generally consistent with those used in the ESDM Report. In the ESDM report, Exhibit 9 indicated that Puff splitting was used, however this was a typographical error and this option was not actually used in the modelling. To maintain consistency with the ESDM report, puff splitting was not modelled for this assessment.

Table 2: CALPUFF Options and Flags

Flag	Value used in 2011 ESDM Report	Value Used in this Assessment	Comments
MGAUSS	1	1	Vertical distribution used in the near field
MCTADJ	3	3	Terrain adjustment method (3 used for partial plume path adjustment)
MCTSG	0	0	Subgrid-Scale complex terrain flag
MSLUG	0	0	Near-field puffs modelled as elongated
MTRANS	1	1	Transitional Plume Rise modelled
MTIP	1	1	Stack-tip downwash
MBDW	2	2	Method used to simulate building downwash 1 = ISC method; 2 = PRIME method
MSHEAR	0	0	Vertical wind shear modelled above stack top
MSPLIT	0*	0	Puff splitting allowed 0 = No; 1 = Yes ** NB: Value of "1" reported in ESDM Report but value of "0" actually used in ESDM Report modelling*
MCHEM	3 (For SPM, PM_{10} and $PM_{2.5}$) 0 (All other Contaminants)	3 (For SPM, PM_{10} and $PM_{2.5}$) 0 (All other Contaminants)	Chemical Transformation Scheme 0 = chemical transformation not modeled 3 = transformation rates computed internally (RIVAD/ARM3 Scheme)
MAQCHEM	0	0	Aqueous phase transformation flag (only used if MCHEM =1 or 3)
MWET	0	0	Wet removal modelled 0 = NO; 1 = Yes

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Flag	Value used in 2011 ESDM Report	Value Used in this Assessment	Comments
MDRY	0	0	Dry deposition modelled 0 = NO; 1 = Yes
MTILT	0	0	Gravitational settling (plume tilt) modelled
MDISP	2	2	Methods used to compute dispersion coefficients 2 = (dispersion coefficients from internally calculated sigma v, sigma w using micrometeorological variables (u*, w*, L, etc.)
MTURBVW	3	3	Sigma measurements used (Used only if MDISP = 1or 5)
MDISP2	3	3	Back-up method used to compute dispersion when measured turbulence data are missing (Used only if MDISP=1 or 5)
MTAULY	0	0	Method used for Lagrangian timescale for Sigma-y (used only if MDISP=1,2 or MSIDP2=1,2)
MTAUADV	0	0	Method used for Advective-Decay timescale for Turbulence (used only if MDISP=2 or MDISP2=2)
MCTURB	1	1	Method used to compute turbulence sigma-v & sigma-w using micrometeorological variables (Used only if MDISP = 2 or MDISP2 = 2)
MROUGH	0	0	PG sigma y,z adjusted for roughness
MPARTL	1	1	Partial plume penetration of elevated inversion
MTINV	0	0	Strength of temp inversion provided in PROFILE.DAT extended records
MPDF	1	1	Probability Distribution Function used for dispersion under convective conditions 0 = NO; 1 = Yes
MSGTIBL	1	1	Sub-grid TIBL module used for shoreline
MBCON	0	0	Boundary conditions (concentration) modeled
MFOG	0	0	Configure for FOG Model output
MREG	0	0	Test options specified to see if they conform to regulatory values

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3.10 Source Parameters

Stack exhaust temperature and flow rate were updated to match the stack characteristics at the time of source testing. All other source parameters are consistent with those used in the ESDM Report. The source parameters modelled are provided in Table 3, below:

Table 3: Modelled Source Parameters

Source ID	Stack Height [m]	Stack Diameter [m]	Flow Rate [m³/s]	Exit Velocity [m/s]	Exhaust Temperature [K]
STCK1	87.6 (No Change)	1.7 (No Change)	55.04 (UPDATED)	24.25 (UPDATED)	415.08 (UPDATED)

The ESDM Report includes an additional modelling scenario which include emissions from silo loading and the standby generator (Scenario H). The predominant contaminants from these sources are particulate from the silo loading and nitrogen oxides from the generator. These two contaminants were assessed and it was determined that, since the Main Stack emissions presented in this report are less than those in the ESDM Report, dispersion modelling would show a decrease in the point of impingement concentration for these two contaminants. As a result, additional dispersion modelling for Scenario H was not conducted.

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4.0 MODELLING RESULTS

Modelling was completed for emissions from the main stack only, using a unit emission rate to generate dispersion factors in µg/m³ per g/s for 10-minute, ½ - hour, 1-hour, 24-hour, 30-day and annual averaging periods. In Ontario, MECP guidance allows for the removal of meteorological anomalies to account for extreme, rare and transient conditions that may be present in the datasets and considered outliers. As such, for air quality assessments that require 24-hour average concentrations, the highest predicted 24-hr concentration in each year of meteorological data may be removed. Similarly, for assessments that use shorter 1-hour average concentrations, the eight highest predicted concentrations in each year may be removed, as per the MECP guidance listed in ADMGO. No predicted results are removed for assessment against annual averaging periods. Elimination of these anomalies is optional but both methodologies are considered acceptable for the demonstration of compliance with Ontario Regulation 419/05 standards. Previously, maximums with anomalies were presented.

The resulting dispersion factors are presented in Table 4, below for both the with and without meteorological anomaly removal:

Table 4: Modelling Dispersion Factors

Averaging Period	10-min	½- hr	1-hr	24-hr	30-day	Annual
Dispersion Factor without meteorological anomaly removal [µg/m³ per g/s]	54.02	39.29	32.74	1.38	0.16	0.06
Dispersion Factor with meteorological anomaly removal [µg/m³ per g/s]	17.10	12.43	10.36	1.14	0.16	0.06

The average emission rate for each contaminant presented in Appendix A was multiplied by the applicable dispersion factor above to calculate the maximum point of impingement concentration for emissions from the main stack. The modelled POI concentrations were compared to the 2018 Schedule 3 standards listed in O.Reg. 419/05 and in the case of $PM_{2.5}$ and PM_{10}, the Ontario Ambient Air Quality Criteria (AAQC).

The MECP updated the list of standards and guidelines for facilities to assess their emissions against, namely the Air Contaminants Benchmark (ACB) List, dated April 2018, which includes standards and guidelines (Benchmark 1) and screening levels (Benchmark 2). The ACB List is required to be used to assess point of impingement (POI) concentrations of contaminants released into the air.

Contaminants released by the Facility that do not have Benchmark 1 standards or guidelines in the ACB List are considered to be 'Contaminants with No MECP POI Limits'. Where applicable, predicted POI concentrations of Contaminants with No MECP POI Limits were screened against the Benchmark 2 screening levels in the ACB List or the de minimus limit.

The modelled concentrations of all compounds assessed were below their relevant MECP standards. The Emission Summary Table has been updated and is included in Appendix B. It has been modified to include reference to the new ACB List and to meet the requirements of the updated MECP guidance document "Procedure for preparing an Emission Summary and Dispersion Modelling Report" (PIBs 3614e04.1, March 2018). Results are presented both with and without meteorological anomaly removal but only the results with meteorological anomaly removal are presented as a percentage of the relevant limit.

The contaminant with the highest predicted concentration relative to O.Reg. 419/05 standard is Nitrogen Oxides at 11% of the relevant limit.

5.0 SUMMARY OF MODELLING UPDATES

The dispersion modelling for the DYEC was updated to reflect data obtained from Compliance November/December 2021 source testing. A summary of the changes made to the modelling are provided in Table 5, below.

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Table 5: ECA Concordance Table

Modelling Inputs	Changes from 2011 ESDM Report
Emission Rates	Updated to use November/December 2021 Source Testing Data. List of contaminants assessed expanded to include all contaminants for which source testing data was performed.
Model and Model Version	Updated model versions in consultation with MECP (See section 3.0)
Meteorology and Terrain data	Updated meteorological and terrain data prepared in consultation with MECP (See Section 3.2)
Receptors	Minor modifications made to receptors located on outskirts of modelling grid to reflect updated domain (See Section 3.3)
Building Downwash	No Change
Deposition	No Change
Chemical Transformations	No Change
Thermal Internal Boundary Layer	No Change
Averaging Times and Conversions	CALPOST input file was modified to generate annual averaging to account for new O.Reg. 419/05 standards introduced in 2016 that include annual averaging periods.
Dispersion Modelling Options	No Change
Background Air Quality Concentrations	Ozone background data used in secondary particulate modelling consistent with the EA.
Emission Summary Table	Updated to include new O.Reg. 419/05 standards introduced after the ECA was approved and contaminants that were not included in the ESDM report but for which source testing data was available.

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6.0 CONCLUSIONS

This assessment was completed to document compliance with Condition 8(7) and 8(8) of Schedule E of the ECA for the DYEC. The results of this assessment demonstrate that the Facility is operating in compliance with the POI limits listed in s.20 of O. Reg. 419/05.

7.0 CLOSURE

We trust this memorandum meets your needs at this time. Should you have any questions please contact the undersigned.

Golder Associates Ltd.

Enoch Chan, B.Eng, EIT
Air Quality Specialist

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Senior Air Quality Specialist

EC/KSA/ng

https://golderassociates.sharepoint.com/sites/140514/project files/6 deliverables/fall 2021/21452106-tm-rev0 covanta updated modelling memo 18feb2022.docx

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APPENDIX A

Site-Wide Emission Inventory

Appendix A
Site-Wide Emission Inventory

Source Identifier	Source Description	Source Parameters					Emission Data						
		Stack Volumetric Flow Rate [Am³/s]	Stack Exit Gas Temperature [°C]	Stack Inner Diameter [m]	Stack Height Above Grade [m]	Stack Location [x, y]	Contaminant	CAS No.	Maximum Emission Rate [g/s]	Averaging Period [hours]	Emission Estimating Technique	Emissions Data Quality	Percentage of Overall Emissions [%]
1A	Main Stack - Fall 2021 Source Testing Conditions	55.04	141.9	1.7	87.6	(680538, 4860346)	1 – methylnaphthalene	90-12-0	5.34E-07	1,24, annual	ST	Above-Average	100%
							1,1,2-Trichloroethane	79-00-5	2.67E-05	1,24, annual	ST	Above-Average	100%
							1,2,3,4-tetrachlorobenzene	634-66-2	7.78E-08	1,24, annual	ST	Above-Average	100%
							1,2,3-trichlorobenzene	87-61-6	9.23E-08	1,24, annual	ST	Above-Average	100%
							1,2,4 – Trichlorobenzene	120-82-1	2.09E-07	1,24, annual	ST	Above-Average	100%
							1,2,4,5-Tetrachlorobenzene	95-94-3	7.78E-08	1,24, annual	ST	Above-Average	100%
							1,2-Dichlorobenzene	95-50-1	6.99E-07	1,24, annual	ST	Above-Average	100%
							1,2-Dichloroethane	107-06-2	1.44E-05	1,24, annual	ST	Above-Average	100%
							1,2-Dichloropropane	78-87-5	1.34E-05	1,24, annual	ST	Above-Average	100%
							1,3,5-trichlorobenzene	108-70-3	8.67E-08	1,24, annual	ST	Above-Average	100%
							1,3-Butadiene	106-99-0	2.67E-05	1,24, annual	ST	Above-Average	100%
							1,3-Dichlorobenzene	541-73-1	8.65E-07	1,24, annual	ST	Above-Average	100%
							1,4-Dichlorobenzene	106-46-7	4.64E-07	1,24, annual	ST	Above-Average	100%
							1-Methylphenanthrene	832-69-9	2.62E-07	1,24, annual	ST	Above-Average	100%
							2 – methylnaphthalene	91-57-6	1.04E-06	1,24, annual	ST	Above-Average	100%
							2,3,4,5-tetrachlorophenol	4901-51-3	5.84E-07	1,24, annual	ST	Above-Average	100%
							2,3,4,6-Tetrachlorophenol	58-90-2	5.84E-07	1,24, annual	ST	Above-Average	100%
							2,3,4-trichlorophenol	15950-66-0	5.84E-07	1,24, annual	ST	Above-Average	100%
							2,3,5,6-tetrachlorophenol	935-95-5	5.84E-07	1,24, annual	ST	Above-Average	100%
							2,3,5-trichlorophenol	933-78-8	5.84E-07	1,24, annual	ST	Above-Average	100%
							2,3,6-trichlorophenol	933-75-5	5.84E-07	1,24, annual	ST	Above-Average	100%
							2,3-dichlorophenol	576-24-9	5.84E-07	1,24, annual	ST	Above-Average	100%
							2,4,5-trichlorophenol	95-95-4	5.84E-07	1,24, annual	ST	Above-Average	100%
							2,4,6-Trichlorophenol	88-06-2	5.84E-07	1,24, annual	ST	Above-Average	100%
							2,4-Dichlorophenol	120-83-2	5.84E-07	1,24, annual	ST	Above-Average	100%
							2,6-dichlorophenol	87-65-0	5.84E-07	1,24, annual	ST	Above-Average	100%
							2-Butanone	78-93-3	4.16E-05	1,24, annual	ST	Above-Average	100%
							2-Chloronaphthalene	91-58-7	7.78E-08	1,24, annual	ST	Above-Average	100%
							2-Methylanthracene	613-12-7	2.98E-07	1,24, annual	ST	Above-Average	100%
							2-monochlorophenol	95-57-8	5.84E-07	1,24, annual	ST	Above-Average	100%
							3,4,5-trichlorophenol	609-19-8	5.84E-07	1,24, annual	ST	Above-Average	100%
							3,4-dichlorophenol	95-77-2	5.84E-07	1,24, annual	ST	Above-Average	100%
							3,5-dichlorophenol	591-35-5	5.84E-07	1,24, annual	ST	Above-Average	100%
							3-Methylcholanthrene	56-49-5	4.71E-07	1,24, annual	ST	Above-Average	100%
							3-monochlorophenol	108-43-0	5.84E-07	1,24, annual	ST	Above-Average	100%
							4-monochlorophenol	106-48-9	5.84E-07	1,24, annual	ST	Above-Average	100%
							7,12-Dimethylbenzo(a)anthracene	57-97-6	7.78E-08	1,24, annual	ST	Above-Average	100%
							9,10-Dimethylanthracene	781-43-1	3.13E-07	1,24, annual	ST	Above-Average	100%
							9-Methylphenanthrene	883-20-5	1.58E-07	1,24, annual	ST	Above-Average	100%

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Source Identifier	Source Description	Source Parameters					Emission Data						
		Stack Volumetric Flow Rate [Am³/s]	Stack Exit Gas Temperature [°C]	Stack Inner Diameter [m]	Stack Height Above Grade [m]	Stack Location [x, y]	Contaminant	CAS No.	Maximum Emission Rate [g/s]	Averaging Period [hours]	Emission Estimating Technique	Emissions Data Quality	Percentage of Overall Emissions [%]
							Acenaphthene	83-32-9	1.07E-07	1,24, annual	ST	Above-Average	7%
							Acenaphthylene	208-96-8	3.03E-07	1,24, annual	ST	Above-Average	9%
							Acetaldehyde	75-07-0	1.94E-03	1,24, annual	ST	Above-Average	100%
							Acetone	67-64-1	1.85E-04	1,24, annual	ST	Above-Average	100%
							Acrolein	107-02-8	9.10E-05	1,24, annual	ST	Above-Average	97%
							Ammonia	7664-41-7	2.74E-02	1,24, annual	ST	Above-Average	100%
							Anthracene	120-12-7	1.51E-07	1,24, annual	ST	Above-Average	27%
							Antimony	7440-36-0	1.19E-05	1,24, annual	ST	Above-Average	100%
							Arsenic	7440-38-2	3.05E-06	1,24, annual	ST	Above-Average	100%
							Barium	7440-39-3	5.05E-05	1,24, annual	ST	Above-Average	100%
							Benzene	71-43-2	2.22E-04	1,24, annual	ST	Above-Average	47%
							Benzo(a)anthracene	56-55-3	7.78E-08	1,24, annual	ST	Above-Average	28%
							Benzo(a)fluorene	238-84-6	8.22E-08	1,24, annual	ST	Above-Average	100%
							Benzo(a)pyrene	50-32-8	7.78E-08	1,24, annual	ST	Above-Average	48%
							Benzo(b)fluoranthene	205-99-2	9.57E-08	1,24, annual	ST	Above-Average	21%
							Benzo(b)fluorene	243-17-4	8.08E-08	1,24, annual	ST	Above-Average	100%
							Benzo(e)pyrene	192-97-2	9.37E-08	1,24, annual	ST	Above-Average	100%
							Benzo(g,h,i)perylene	191-24-2	2.58E-07	1,24, annual	ST	Above-Average	100%
							Benzo(k)fluoranthene	207-08-9	7.78E-08	1,24, annual	ST	Above-Average	52%
							Beryllium	7440-41-7	2.33E-06	1,24, annual	ST	Above-Average	100%
							Biphenyl	92-51-3	4.75E-07	1,24, annual	ST	Above-Average	100%
							Bromodichloromethane	75-27-4	1.36E-05	1,24, annual	ST	Above-Average	100%
							Bromoform	75-25-2	1.34E-05	1,24, annual	ST	Above-Average	100%
							Bromomethane	74-83-9	1.20E-04	1,24, annual	ST	Above-Average	100%
							Cadmium	7440-43-9	1.69E-06	1,24, annual	ST	Above-Average	100%
							Carbon Monoxide	630-08-0	4.23E-01	1,24, annual	ST	Above-Average	62%
							Carbon tetrachloride	56-23-5	1.34E-05	1,24, annual	ST	Above-Average	100%
							Chlorobenzene	108-90-7	3.62E-06	1,24, annual	ST	Above-Average	100%
							Chloroform	67-66-3	4.51E-05	1,24, annual	ST	Above-Average	100%
							Chromium (hexavalent)	18540-29-9	3.02E-05	1,24, annual	ST	Above-Average	100%
							Chrysene	218-01-9	9.32E-08	1,24, annual	ST	Above-Average	16%
							Cobalt	7440-48-4	2.07E-06	1,24, annual	ST	Above-Average	100%
							Copper	7440-50-8	7.79E-05	1,24, annual	ST	Above-Average	100%
							Coronene	191-07-1	4.00E-07	1,24, annual	ST	Above-Average	100%
							Cumene (Isopropylbenzene)	98-82-8	2.67E-05	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,c)anthracene	215-58-7	7.78E-08	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,e)pyrene	192-65-4	3.89E-07	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,h)anthracene	53-70-3	7.78E-08	1,24, annual	ST	Above-Average	41%
							Dibromochloromethane	124-48-1	1.38E-05	1,24, annual	ST	Above-Average	100%
							Dichlorodifluoromethane	75-71-8	2.67E-05	1,24, annual	ST	Above-Average	100%
							Dichloroethene, 1,1 -	75-34-3	1.34E-05	1,24, annual	ST	Above-Average	100%

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Source Identifier	Source Description	Source Parameters					Emission Data						
		Stack Volumetric Flow Rate [Am³/s]	Stack Exit Gas Temperature [°C]	Stack Inner Diameter [m]	Stack Height Above Grade [m]	Stack Location [x, y]	Contaminant	CAS No.	Maximum Emission Rate [g/s]	Averaging Period [hours]	Emission Estimating Technique	Emissions Data Quality	Percentage of Overall Emissions [%]
							Dichloromethane	75-09-2	2.26E-04	1,24, annual	ST	Above-Average	100%
							Dioxins, Furans and Dioxin- like PCBs	N/A	0.00033 µg TEQ/s	1,24, annual	ST	Above-Average	100%
							Ethylbenzene	100-41-4	1.34E-05	1,24, annual	ST	Above-Average	100%
							Ethylene Dibromide	106-93-4	2.67E-05	1,24, annual	ST	Above-Average	100%
							Fluoranthene	206-44-0	7.06E-07	1,24, annual	ST	Above-Average	35%
							Fluorides	7664-39-3	4.05E-03	1,24, annual	ST	Above-Average	100%
							Fluorene	86-73-7	4.04E-07	1,24, annual	ST	Above-Average	9%
							Formaldehyde	50-00-0	6.30E-04	1,24, annual	ST	Above-Average	96%
							Hexachlorobenzene	118-74-1	7.78E-08	1,24, annual	ST	Above-Average	100%
							Hydrogen Chloride	7647-01-0	1.59E-01	1,24, annual	ST	Above-Average	100%
							Indeno(1,2,3 – cd)pyrene	193-39-5	7.78E-08	1,24, annual	ST	Above-Average	36%
							Lead	7439-92-1	1.23E-05	1,24, annual	ST	Above-Average	100%
							M&P-Xylene	179601-23-1	4.01E-05	1,24, annual	ST	Above-Average	100%
							Mercury	7439-97-6	2.08E-06	1,24, annual	ST	Above-Average	100%
							Mesitylene (1,3,5-Trimethylbenzene)	108-67-8	2.74E-05	1,24, annual	ST	Above-Average	100%
							Molybdenum	7439-98-7	2.66E-04	1,24, annual	ST	Above-Average	100%
							m-Terphenyl	92-06-8	8.29E-08	1,24, annual	ST	Above-Average	100%
							Naphthalene	91-20-3	4.24E-06	1,24, annual	ST	Above-Average	9%
							Nickel	7440-02-0	2.62E-05	1,24, annual	ST	Above-Average	100%
							Nitrogen Oxides	10102-44-0	4.37E+00	1,24, annual	ST	Above-Average	44%
							Nitrogen Oxides	10102-44-0	4.37E+00	1,24, annual	ST	Above-Average	44%
							O-terphenyl	84-15-1	7.83E-08	1,24, annual	ST	Above-Average	100%
							O-Xylene	95-47-6	1.34E-05	1,24, annual	ST	Above-Average	100%
							Pentachlorobenzene	608-93-5	7.78E-08	1,24, annual	ST	Above-Average	100%
							Pentachlorophenol	87-86-5	5.84E-07	1,24, annual	ST	Above-Average	100%
							Perylene	198-55-0	7.78E-08	1,24, annual	ST	Above-Average	100%
							Phenanthrene	85-01-8	1.59E-06	1,24, annual	ST	Above-Average	11%
							Picene	213-46-7	3.89E-07	1,24, annual	ST	Above-Average	100%
							PM10 (Condensable and Filterable)	N/A	1.79E-01	1,24, annual	ST	Above-Average	74%
							PM10 (Filterable Only)	N/A	1.37E-02	1,24, annual	ST	Above-Average	100%
							PM2.5 (Condensable and Filterable)	N/A	1.74E-01	1,24, annual	ST	Above-Average	74%
							PM2.5 (Filterable Only)	N/A	8.62E-03	1,24, annual	ST	Above-Average	100%
							Polychlorinated Biphenyls (PCB)	N/A	3.30E-04	1,24, annual	ST	Above-Average	100%
							p-Terphenyl	92-94-4	7.78E-08	1,24, annual	ST	Above-Average	100%
							Pyrene	129-00-0	8.33E-07	1,24, annual	ST	Above-Average	41%
							Selenium	7782-49-2	8.33E-06	1,24, annual	ST	Above-Average	100%
							Silver	7440-22-4	1.67E-06	1,24, annual	ST	Above-Average	100%
							Styrene	100-42-5	3.10E-05	1,24, annual	ST	Above-Average	100%
							Sulphur Dioxide	7446-09-5	9.22E-03	1,24, annual	ST	Above-Average	33%
							Tetrachloroethene	127-18-4	1.79E-05	1,24, annual	ST	Above-Average	100%
							Tetralin	119-64-2	6.52E-07	1,24, annual	ST	Above-Average	100%

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Source Identifier	Source Description	Source Parameters					Emission Data						
		Stack Volumetric Flow Rate [Am³/s]	Stack Exit Gas Temperature [°C]	Stack Inner Diameter [m]	Stack Height Above Grade [m]	Stack Location [x, y]	Contaminant	CAS No.	Maximum Emission Rate [g/s]	Averaging Period [hours]	Emission Estimating Technique	Emissions Data Quality	Percentage of Overall Emissions [%]
							Thallium	7440-28-0	2.63E-06	1,24, annual	ST	Above-Average	100%
							Toluene	108-88-3	1.25E-03	1,24, annual	ST	Above-Average	93%
							Total Chromium (and compounds)	7440-47-3	3.02E-05	1,24, annual	ST	Above-Average	100%
							Total Particulate Matter (Condensable and Filterable)	N/A	1.81E-01	1,24, annual	ST	Above-Average	71%
							Total Particulate Matter (Filterable Only)	N/A	1.56E-02	1,24, annual	ST	Above-Average	43%
							trans,1,2-Dichloroethene	156-60-5	1.34E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethane, 1,1,1 -	71-55-6	1.34E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethene	79-01-6	2.67E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethylene, 1,1,2 -	79-01-6	2.67E-05	1,24, annual	ST	Above-Average	100%
							Trichlorofluoromethane	75-69-4	2.67E-05	1,24, annual	ST	Above-Average	100%
							Trichlorotrifluoroethane	76-13-1	2.67E-05	1,24, annual	ST	Above-Average	100%
							Vanadium	7440-62-2	2.35E-06	1,24, annual	ST	Above-Average	100%
							Vinyl chloride	75-01-4	2.67E-05	1,24, annual	ST	Above-Average	100%
							Xylenes, m-, p- and o-	1330-20-7	5.34E-05	1,24, annual	ST	Above-Average	46%
							Zinc	7440-66-6	1.57E-04	1,24, annual	ST	Above-Average	100%

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Source Identifier	Source Description	Source Parameters					Emission Data						
		Stack Volumetric Flow Rate [Am³/s]	Stack Exit Gas Temperature [°C]	Stack Inner Diameter [m]	Stack Height Above Grade [m]	Stack Location [x, y]	Contaminant	CAS No.	Maximum Emission Rate [g/s]	Averaging Period [hours]	Emission Estimating Technique	Emissions Data Quality	Percentage of Overall Emissions [%]
2	Silo Filling	0.31	Ambient	0.10	5.4864	(680551,4860359)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	4%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	4%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	5%
		0.31	Ambient	0.10	4.8768	(680513,4860332)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	4%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	4%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	5%
		0.31	Ambient	0.10	3.9624	(680517,4860333)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	4%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	4%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	5%
		0.31	Ambient	0.10	12.4	(680537,4860391)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	4%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	4%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	5%
3	Stand-by generator	1.16	265.85	0.2	3	(680475,4860419)	Carbon Monoxide	630-08-0	2.56E-01	½	EF	Marginal	38%
							Nitrogen Oxides	10102-44-0	1.12E+00	½	EF	Marginal	11%
							Sulphur Dioxide	7446-09-5	1.88E-02	½	EF	Above-Average	67%
							Total Particulate Matter	N/A	3.25E-02	½	EF	Above-Average	13%
							Filterable TSP	N/A	2.03E-02	½	EF	Above-Average	57%
							PM_{10}	N/A	1.88E-02	½	EF	Above-Average	8%
							$PM_{2.5}$	N/A	1.88E-02	½	EF	Above-Average	8%
							Sulphuric Acid	7664-93-9	2.88E-04	½	EC	Above-Average	100%
							Benzene	71-43-2	2.54E-04	½	EF	Marginal	53%
							Toluene	108-88-3	9.21E-05	½	EF	Marginal	7%
							Xylenes, m-, p- and o-	1330-20-7	6.32E-05	½	EF	Marginal	54%
							Propylene	115-07-1	9.14E-04	½	EF	Marginal	100%
							Formaldehyde	50-00-0	2.58E-05	½	EF	Marginal	4%
							Acetaldehyde	75-07-0	8.26E-06	½	EF	Marginal	<1%
							Acrolein	107-02-8	2.58E-06	½	EF	Marginal	3%
							Naphthalene	91-20-3	4.26E-05	½	EF	Marginal	91%
							Acenaphthylene	208-96-8	3.02E-06	½	EF	Marginal	91%
							Acenaphthene	83-32-9	1.53E-06	½	EF	Marginal	93%
							Fluorene	86-73-7	4.19E-06	½	EF	Marginal	91%
							Phenanthrene	85-01-8	1.34E-05	½	EF	Marginal	89%
							Anthracene	120-12-7	4.03E-07	½	EF	Marginal	73%
							Fluoranthene	206-44-0	1.32E-06	½	EF	Marginal	65%
							Pyrene	129-00-0	1.22E-06	½	EF	Marginal	59%
							Benzo(a)anthracene	56-55-3	2.04E-07	½	EF	Marginal	72%
							Chrysene	218-01-9	5.01E-07	½	EF	Marginal	84%
							Benzo(b)fluoranthene	205-99-2	3.64E-07	½	EF	Marginal	79%
							Benzo(k)fluoranthene	207-08-9	7.14E-08	½	EF	Marginal	48%
							Benzo(a)pyrene	50-32-8	8.42E-08	½	EF	Marginal	52%
							Indeno(1,2,3 – cd)pyrene	193-39-5	1.36E-07	½	EF	Marginal	64%
							Dibenzo(a,h)anthracene	53-70-3	1.13E-07	½	EF	Marginal	59%
							Benzo(ghi)perylene	191-24-2	1.82E-07	½	EF	Marginal	100%

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APPENDIX B

Emission Summary Table

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Appendix B
Emission Summary Table

Contaminant	CAS No.	Total Facility Emission Rate [g/s]	Air Dispersion Model Used	Maximum POI Concentration Before Meteorological Anomaly Removal [µg/m³]	Maximum POI Concentration After Meeorological Anomaly Removal [µg/m³]	Averaging Period	MECP POI Limit [µg/m³]	Limiting Effect	Schedule	Source	Benchmark	Percentage of MECP Limit [%]	Notes	Version of Date of ACB List
1 – methylnaphthalene	90-12-0	5.34E-07	Calpuff	7.39E-07	6.10E-07	24-hour	35.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
1,2,4 – Trichlorobenzene	120-82-1	2.09E-07	Calpuff	2.89E-07	2.39E-07	24-hour	400	Particulate	Sch. 3	Guideline	B1	<1%	—	Apr-18
1,2,4,5-Tetrachlorobenzene	95-94-3	7.78E-08	Calpuff	1.08E-07	8.89E-08	24-hour	1	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
1,2-Dichlorobenzene	95-50-1	6.99E-07	Calpuff	2.29E-05	7.25E-06	1-hour	30500	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
2 – methylnaphthalene	91-57-6	1.04E-06	Calpuff	1.44E-06	1.19E-06	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
2,3,4,6-Tetrachlorophenol	58-90-2	5.84E-07	Calpuff	8.08E-07	6.67E-07	24-hour	0.75	Health	—	SL-JSL	B2	Below SL-JSL	—	Apr-18
2,4,6-Trichlorophenol	88-06-2	5.84E-07	Calpuff	8.08E-07	6.67E-07	24-hour	1.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
2,4-Dichlorophenol	120-83-2	5.84E-07	Calpuff	8.08E-07	6.67E-07	24-hour	33.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
3-Methylcholanthrene	56-49-5	4.71E-07	Calpuff	6.51E-07	5.38E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Apr-18
7,12-Dimethylbenzo(a)anthracene	57-97-6	7.78E-08	Calpuff	1.08E-07	8.89E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus		Apr-18
Acenaphthene	83-32-9	1.07E-07	Calpuff	1.48E-07	1.22E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Acenaphthylene	208-96-8	3.03E-07	Calpuff	4.19E-07	3.46E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Acetaldehyde	75-07-0	1.94E-03	Calpuff	2.68E-03	2.22E-03	24-hour	500	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Acetaldehyde	75-07-0	1.94E-03	Calpuff	2.68E-03	2.22E-03	24-hour	5000	—	Sch. 6	URT	—	<1%	—	
Acrolein	107-02-8	9.10E-05	Calpuff	1.26E-04	1.04E-04	24-hour	0.4	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Acrolein	107-02-8	9.10E-05	Calpuff	2.98E-03	9.43E-04	1-hour	4.5	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Acrolein	107-02-8	9.10E-05	Calpuff	1.26E-04	1.04E-04	24-hour	4	Health	Sch. 6	URT	—	<1%	—	Apr-18
Ammonia	7664-41-7	2.74E-02	Calpuff	3.79E-02	3.13E-02	24-hour	100	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Ammonia	7664-41-7	2.74E-02	Calpuff	3.79E-02	3.13E-02	24-hour	1000	Health	Sch. 6	URT	—	<1%	—	Apr-18
Anthracene	120-12-7	1.51E-07	Calpuff	2.09E-07	1.72E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Antimony	7440-36-0	1.19E-05	Calpuff	1.65E-05	1.36E-05	24-hour	25	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Arsenic	7440-38-2	3.05E-06	Calpuff	4.21E-06	3.48E-06	24-hour	0.3	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Barium	7440-39-3	5.05E-05	Calpuff	6.98E-05	5.77E-05	24-hour	10	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Benzene	71-43-2	2.22E-04	Calpuff	1.23E-05	1.23E-05	Annual	0.45	Health	Sch. 3	Standard	B1	<1%	Note 19, Table 2, 3 URT - Note 4, Table 4	Apr-18
Benzene	71-43-2	2.22E-04	Calpuff	3.08E-04	2.54E-04	24-hour	100	Health	Sch. 6	URT/DAV	B1	<1%	—	
Benzene	71-43-2	2.22E-04	Calpuff	1.23E-05	1.23E-05	Annual	4.5	Health	—	AAV	—	<1%	—	Apr-18
Benzo(a)anthracene	56-55-3	7.78E-08	Calpuff	1.08E-07	8.89E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(a)fluorene	238-84-6	8.22E-08	Calpuff	1.14E-07	9.39E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(a)pyrene	50-32-8	7.78E-08	Calpuff	4.29E-09	4.29E-09	Annual	0.00001	Health	Sch. 3	Standard	B1	<1%	Note 7, 19, Table 2, 3URT - Note 4, Table 4	Apr-18
Benzo(a)pyrene	50-32-8	7.78E-08	Calpuff	1.08E-07	8.89E-08	24-hour	0.005	Health	Sch. 6	URT	—	<1%	—	Apr-18
Benzo(a)pyrene	50-32-8	7.78E-08	Calpuff	4.29E-09	4.29E-09	Annual	0.0001	Health	—	AAV	—	<1%	—	Apr-18
Benzo(b)fluoranthene	205-99-2	9.57E-08	Calpuff	1.32E-07	1.09E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(b)fluorene	243-17-4	8.08E-08	Calpuff	1.12E-07	9.23E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(e)pyrene	192-97-2	9.37E-08	Calpuff	1.30E-07	1.07E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(g,h,i)perylene	191-24-2	2.58E-07	Calpuff	3.57E-07	2.95E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Benzo(k)fluoranthene	207-08-9	7.78E-08	Calpuff	1.08E-07	8.89E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Beryllium	7440-41-7	2.33E-06	Calpuff	3.23E-06	2.66E-06	24-hour	0.01	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Biphenyl	92-51-3	4.75E-07	Calpuff	6.57E-07	5.42E-07	24-hour	175	Health	—	SL-JSL	B2	Below SL-JSL	—	Apr-18
Bromodichloromethane	75-27-4	1.36E-05	Calpuff	1.88E-05	1.55E-05	24-hour	350	Health	—	SL-JSL	B2	Below SL-JSL	—	Apr-18
Bromoform	75-25-2	1.34E-05	Calpuff	1.85E-05	1.53E-05	24-hour	55	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Bromomethane	74-83-9	1.20E-04	Calpuff	1.66E-04	1.37E-04	24-hour	1350	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Cadmium	7440-43-9	1.69E-06	Calpuff	2.33E-06	1.93E-06	24-hour	0.025	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Cadmium	7440-43-9	1.69E-06	Calpuff	2.33E-06	1.93E-06	24-hour	0.25	Health	Sch. 6	URT	—	<1%	—	Apr-18
Carbon Monoxide	630-08-0	4.23E-01	Calpuff	1.66E+01	5.26E+00	1/2-hour	6000	Health	Sch. 3	Standard	B1	<1%	Note 9	Apr-18
Carbon tetrachloride	56-23-5	1.34E-05	Calpuff	1.85E-05	1.53E-05	24-hour	2.4	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Carbon tetrachloride	56-23-5	1.34E-05	Calpuff	1.85E-05	1.53E-05	24-hour	24	Health	Sch. 6	URT	—	<1%	—	Apr-18
Chlorobenzene	108-90-7	3.62E-06	Calpuff	1.19E-04	3.75E-05	1-hour	3500	Health	Sch. 3	Guideline	B1	<1%	Note 2, 3	
Chlorobenzene	108-90-7	3.62E-06	Calpuff	1.96E-04	6.19E-05	10-minute	4500	Odour	Sch. 3	Guideline	B1	<1%	Note 2, 3	
Chloroform	67-66-3	4.51E-05	Calpuff	6.24E-05	5.15E-05	24-hour	1	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Chloroform	67-66-3	4.51E-05	Calpuff	6.24E-05	5.15E-05	24-hour	100	Health	Sch. 6	URT	—	<1%	—	Apr-18
Chromium (hexavalent)	18540-29-9	3.02E-05	Calpuff	1.67E-06	1.67E-06	Annual	0.00014	Health	Sch. 3	Standard	B1	1%	Notes 11, 19, Table 2, 3URT - Note 4, Table 4	Apr-18
Chromium (hexavalent)	18540-29-9	3.02E-05	Calpuff	4.18E-05	3.45E-05	24-hour	0.07	Health	Sch. 6	URT	—	<1%	—	
Chrysene	218-01-9	9.32E-08	Calpuff	1.29E-07	1.06E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Cobalt	7440-48-4	2.07E-06	Calpuff	2.86E-06	2.36E-06	24-hour	0.1	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Copper	7440-50-8	7.79E-05	Calpuff	1.08E-04	8.89E-05	24-hour	50	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Dibenzo(a,c)anthracene	215-58-7	7.78E-08	Calpuff	1.08E-07	8.89E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Dibenzo(a,h)anthracene	53-70-3	7.78E-08	Calpuff	1.08E-07	8.89E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Dichlorodifluoromethane	75-71-8	2.67E-05	Calpuff	3.70E-05	3.05E-05	24-hour	500000	Health	Sch. 3	Guideline	B1	<1%	Note 10	Apr-18
Dichloroethene, 1,1 -	75-34-3	1.34E-05	Calpuff	1.85E-05	1.53E-05	24-hour	165	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Dichloroethene, 1,1 -	75-34-3	1.34E-05	Calpuff	1.85E-05	1.53E-05	24-hour	1650	Health	Sch. 6	URT	—	<1%	—	Apr-18
Dichloromethane	75-09-2	2.26E-04	Calpuff	3.12E-04	2.58E-04	24-hour	220	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Dichloromethane	75-09-2	2.26E-04	Calpuff	3.12E-04	2.58E-04	24-hour	22000	Health	Sch. 6	URT	—	<1%	—	Apr-18
Dioxins, Furans and Dioxin- like PCBs	N/A	0.00033 µg TEQ/s	Calpuff	0.00046 pg TEQ/m³	0.00038 pg TEQ/m³	24-hour	0.1 pg TEQ/m³	Health	Sch. 3	Guideline	B1	<1%	Note 8, 8a, Table 1URT - Note 4, Table 4	Apr-18
Ethylbenzene	100-41-4	1.34E-05	Calpuff	1.85E-05	1.53E-05	24-hour	1000	Not Applicable	Sch. 3	Guideline	B1	<1%	Note 2, 3	Apr-18
Ethylbenzene	100-41-4	1.34E-05	Calpuff	7.22E-04	2.28E-04	10-minute	1900	Not Applicable	Sch. 3	Guideline	B1	<1%	Note 2, 3	Apr-18
Ethylbenzene	100-41-4	1.34E-05	Calpuff	1.85E-05	1.53E-05	24-hour	14000	Not Applicable	Sch. 6	URT	—	<1%	—	Apr-18
Ethylene Dibromide	106-93-4	2.67E-05	Calpuff	3.70E-05	3.05E-05	24-hour	3	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Fluoranthene	206-44-0	7.06E-07	Calpuff	9.77E-07	8.06E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Fluorides	7664-39-3	4.05E-03	Calpuff	5.60E-03	4.63E-03	24-hour	0.86	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	4.05E-03	Calpuff	6.58E-04	6.58E-04	30-day	0.34	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	4.05E-03	Calpuff	5.60E-03	4.63E-03	24-hour	1.74	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	4.05E-03	Calpuff	6.58E-04	6.58E-04	30-day	0.69	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	4.05E-03	Calpuff	5.60E-03	4.63E-03	24-hour	3.44	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorides	7664-39-3	4.05E-03	Calpuff	6.58E-04	6.58E-04	30-day	1.38	Vegetation	Sch. 3	Standard	B1	<1%	Note 2, 20	Apr-18
Fluorene	86-73-7	4.04E-07	Calpuff	5.58E-07	4.61E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18

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Appendix B
Emission Summary Table

Contaminant	CAS No.	Total Facility Emission Rate [g/s]	Air Dispersion Model Used	Maximum POI Concentration Before Meteorological Anomaly Removal [µg/m³]	Maximum POI Concentration After Meeorological Anomaly Removal [µg/m³]	Averaging Period	MECP POI Limit [µg/m³]	Limiting Effect	Schedule	Source	Benchmark	Percentage of MECP Limit [%]	Notes	Version of Date of ACB List
Formaldehyde	50-00-0	6.30E-04	Calpuff	8.71E-04	7.20E-04	24-hour	65	Odour & Irritation	Sch. 3	Standard	B1	<1%	—	Apr-18
Hexachlorobenzene	118-74-1	7.78E-08	Calpuff	1.08E-07	8.89E-08	24-hour	0.011	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
Hydrogen Chloride	7647-01-0	1.59E-01	Calpuff	2.20E-01	1.81E-01	24-hour	20	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Hydrogen Chloride	7647-01-0	1.59E-01	Calpuff	2.20E-01	1.81E-01	24-hour	200	Health	Sch. 6	URT	—	<1%	—	Apr-18
Indeno(1,2,3 – cd)pyrene	193-39-5	7.78E-08	Calpuff	1.08E-07	8.89E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Lead	7439-92-1	1.23E-05	Calpuff	1.71E-05	1.41E-05	24-hour	0.5	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Lead	7439-92-1	1.23E-05	Calpuff	2.00E-06	2.00E-06	30-day	0.2	Health	Sch. 3	Standard	B1	<1%	Note 2URT - Note 4, Table 4	Apr-18
Lead	7439-92-1	1.23E-05	Calpuff	1.71E-05	1.41E-05	24-hour	2	Health	Sch. 6	URT	—	<1%	Note 2URT - Note 4, Table 4	Apr-18
Mercury	7439-97-6	2.08E-06	Calpuff	2.88E-06	2.38E-06	24-hour	2	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Molybdenum	7439-98-7	2.66E-04	Calpuff	3.68E-04	3.04E-04	24-hour	120	Particulate	Sch. 3	Guideline	B1	<1%	—	Apr-18
Naphthalene	91-20-3	4.24E-06	Calpuff	5.87E-06	4.85E-06	24-hour	22.5	Odour	Sch. 3	Guideline	B1	<1%	Note 2, 3	Apr-18
Naphthalene	91-20-3	4.24E-06	Calpuff	2.29E-04	7.26E-05	10-minute	50	Odour	Sch. 3	Guideline	B1	<1%	Note 2, 3	Apr-18
Nickel	7440-02-0	2.62E-05	Calpuff	1.44E-06	1.44E-06	Annual	0.04	Health	Sch. 3	Standard	B1	<1%	Note 19, Table 2, 3URT - Note 4, Table 4	Apr-18
Nickel	7440-02-0	2.62E-05	Calpuff	3.62E-05	2.99E-05	24-hour	2	Health	Sch. 6	URT	—	<1%	—	Apr-18
Nickel	7440-02-0	2.62E-05	Calpuff	1.44E-06	1.44E-06	Annual	0.4	Health	—	AAV	—	<1%	—	Apr-18
Nitrogen Oxides	10102-44-0	4.37E+00	Calpuff	6.05E+00	5.00E+00	24-hour	200	Health	Sch. 3	Standard	B1	2%	Notes 2, 17	Apr-18
Nitrogen Oxides	10102-44-0	4.37E+00	Calpuff	1.43E+02	4.53E+01	1-hour	400	Health	Sch. 3	Standard	B1	11%	Notes 2, 17	Apr-18
O-terphenyl	84-15-1	7.83E-08	Calpuff	1.08E-07	8.94E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	
PM_{10} (Condensable and Filterable)	N/A	1.79E-01	Calpuff	3.08E-01	2.50E-01	24-hour	50	—	—	AAQC	—	<1%	—	
PM_{10} (Filterable Only)	N/A	1.37E-02	Calpuff	2.35E-01	1.67E-01	24-hour	50	—	—	AAQC	—	<1%	—	
$PM_{2.5}$ (Condensable and Filterable)	N/A	1.74E-01	Calpuff	3.05E-01	2.44E-01	24-hour	27	—	—	AAQC	—	<1%	—	
$PM_{2.5}$ (Filterable Only)	N/A	8.62E-03	Calpuff	2.33E-01	1.66E-01	24-hour	27	—	—	AAQC	—	<1%	—	
Pentachlorobenzene	608-93-5	7.78E-08	Calpuff	1.08E-07	8.89E-08	24-hour	80	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
Pentachlorophenol	87-86-5	5.84E-07	Calpuff	8.08E-07	6.67E-07	24-hour	20	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Perylene	198-55-0	7.78E-08	Calpuff	1.08E-07	8.89E-08	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Phenanthrene	85-01-8	1.59E-06	Calpuff	2.20E-06	1.82E-06	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Pyrene	129-00-0	8.33E-07	Calpuff	1.15E-06	9.51E-07	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Selenium	7782-49-2	8.33E-06	Calpuff	1.15E-05	9.52E-06	24-hour	10	Health	Sch. 3	Guideline	B1	<1%	—	Apr-18
Silver	7440-22-4	1.67E-06	Calpuff	2.31E-06	1.90E-06	24-hour	1	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Sulphur Dioxide	7446-09-5	9.22E-03	Calpuff	1.27E-02	1.05E-02	24-hour	275	Health	Sch. 3	Standard	B1	<1%	Effective until July 1, 2023Note 2URT - Note 4, Table 4	Apr-18
Sulphur Dioxide	7446-09-5	9.22E-03	Calpuff	3.02E-01	9.55E-02	1-hour	690	Health	Sch. 3	Standard	B1	<1%	Effective until July 1, 2023Note 2URT - Note 4, Table 4	Apr-18
Tetrachloroethene	127-18-4	1.79E-05	Calpuff	2.47E-05	2.04E-05	24-hour	360	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Tetrachloroethene	127-18-4	1.79E-05	Calpuff	2.47E-05	2.04E-05	24-hour	3600	Health	Sch. 6	URT	—	<1%	—	
Tetralin	119-64-2	6.52E-07	Calpuff	9.01E-07	7.44E-07	24-hour	151.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
Thallium	7440-28-0	2.63E-06	Calpuff	3.64E-06	3.00E-06	24-hour	0.5	Health	Sch. 3	SL-JSL	B2	Below SL-JSL	—	Apr-18
Toluene	108-88-3	1.25E-03	Calpuff	1.73E-03	1.43E-03	24-hour	2000	Not Applicable	Sch. 3	Guideline	B1	<1%	To be updated - Note 5	Apr-18
Total Chromium (and compounds)	7440-47-3	3.02E-05	Calpuff	4.18E-05	3.45E-05	24-hour	0.5	Health	Sch. 3	Standard	B1	<1%	Note 11aURT - Note 4, Table 4	Apr-18
Total Chromium (and compounds)	7440-47-3	3.02E-05	Calpuff	4.18E-05	3.45E-05	24-hour	5	Health	Sch. 6	URT	—	<1%	—	Apr-18
Total Particulate Matter (Condensable and Filterable)	N/A	1.81E-01	Calpuff	3.09E-01	2.52E-01	24-hour	120	Particulate	Sch. 3	Guideline	B1	<1%	—	Apr-18
Total Particulate Matter (Filterable only)	N/A	1.56E-02	Calpuff	2.35E-01	1.67E-01	24-hour	120	Particulate	Sch. 3	Guideline	B1	<1%	—	Apr-18
Trichloroethane, 1,1,1 -	71-55-6	1.34E-05	Calpuff	1.85E-05	1.53E-05	24-hour	115000	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Trichloroethene	79-01-6	2.67E-05	Calpuff	3.70E-05	3.05E-05	24-hour	0.1	—	—	De Minimus	—	Below De Minimus	—	Apr-18
Trichloroethylene, 1,1,2 -	79-01-6	2.67E-05	Calpuff	3.70E-05	3.05E-05	24-hour	12	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Trichloroethylene, 1,1,2 -	79-01-6	2.67E-05	Calpuff	3.70E-05	3.05E-05	24-hour	1200	Health	Sch. 6	URT	—	<1%	—	Apr-18
Trichlorofluoromethane	75-69-4	2.67E-05	Calpuff	3.70E-05	3.05E-05	24-hour	6000	Health	Sch. 3	Guideline	B1	<1%	Note 10	Apr-18
Vanadium	7440-62-2	2.35E-06	Calpuff	3.25E-06	2.69E-06	24-hour	2	Health	Sch. 3	Standard	B1	<1%	—	Apr-18
Vinyl chloride	75-01-4	2.67E-05	Calpuff	3.70E-05	3.05E-05	24-hour	1	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Vinyl chloride	75-01-4	2.67E-05	Calpuff	3.70E-05	3.05E-05	24-hour	100	Health	Sch. 6	URT	—	<1%	—	Apr-18
Xylenes, m-, p- and o-	1330-20-7	5.34E-05	Calpuff	7.39E-05	6.10E-05	24-hour	730	Not Applicable	Sch. 3	Guideline	B1	<1%	Note 2, 3, 22	Apr-18
Xylenes, m-, p- and o-	1330-20-7	5.34E-05	Calpuff	2.89E-03	9.14E-04	10-minute	3000	Not Applicable	Sch. 3	Guideline	B1	<1%	Note 2, 3, 22	Apr-18
Xylenes, m-, p- and o-	1330-20-7	5.34E-05	Calpuff	7.39E-05	6.10E-05	24-hour	7300	Not Applicable	Sch. 6	URT	—	<1%	—	Apr-18
Zinc	7440-66-6	1.57E-04	Calpuff	2.17E-04	1.79E-04	24-hour	120	Particulate	Sch. 3	Standard	B1	<1%	—	Apr-18

DRAFT

APPENDIX 28

DYEC CEMS 1-Hour Average Data
(4 pages)

Covanta - Durham York Energy Centre
Boiler No. 1 CEMS

			BH Outlet									Scrubber Inlet
		O_2	CO		SO_2		NOx		HCl		THC	O_2
		%	mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2	%
Date	Time	1-hr	1-hr	Rolling 4-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	1-hr
29-Nov-21	0:00	9.09	9		0		110		2		0	9
29-Nov-21	1:00	9.38	9		0		113		3		0	9
29-Nov-21	2:00	9.22	10		0		106		3		0	9
29-Nov-21	3:00	8.92	11	9.8	0		106		2		0	9
29-Nov-21	4:00	9.33	11	10.3	0		126		2		0	9
29-Nov-21	5:00	8.99	8	10.0	0		109		2		0	9
29-Nov-21	6:00	9.07	14	11.0	0		123		3		0	9
29-Nov-21	7:00	8.84	6	9.8	0		115		2		0	9
29-Nov-21	8:00	9.24	7	8.8	0		113		2		0	9
29-Nov-21	9:00	8.72	6	8.3	0		107		2		0	9
29-Nov-21	10:00	8.90	5	6.0	0		115		2		0	9
29-Nov-21	11:00	8.99	6	6.0	0		110		3		0	9
29-Nov-21	12:00	8.71	7	6.0	0		112		2		0	9
29-Nov-21	13:00	8.73	8	6.5	1		105		2		0	9
29-Nov-21	14:00	8.59	8	7.3	0		103		2		0	9
29-Nov-21	15:00	8.95	9	8.0	0		116		2		0	9
29-Nov-21	16:00	8.93	8	8.3	0		115		3		0	9
29-Nov-21	17:00	8.92	7	8.0	0		108		3		0	9
29-Nov-21	18:00	8.52	7	7.8	0		112		2		0	8
29-Nov-21	19:00	8.94	6	7.0	0		113		3		0	9
29-Nov-21	20:00	8.90	8	7.0	5		101		3		0	9
29-Nov-21	21:00	8.40	15	9.0	0		106		2		0	8
29-Nov-21	22:00	9.02	9	9.5	0		113		3		0	9
29-Nov-21	23:00	9.13	7	9.8	0	0.3	109	111	4	2.5	0	9
30-Nov-21	0:00	9.10	7	9.5	0	0.3	114	111	3	2.5	0	9
30-Nov-21	1:00	9.21	11	8.5	0	0.3	113	111	3	2.5	0	9
30-Nov-21	2:00	9.11	7	8.0	0	0.3	109	111	3	2.5	0	9
30-Nov-21	3:00	8.74	9	8.5	0	0.3	106	111	2	2.5	0	9
30-Nov-21	4:00	8.61	7	8.5	0	0.3	126	111	2	2.5	0	8
30-Nov-21	5:00	8.74	6	7.3	0	0.3	112	112	2	2.5	0	8
30-Nov-21	6:00	8.92	6	7.0	0	0.3	133	112	3	2.5	0	9
30-Nov-21	7:00	8.63	6	6.3	0	0.3	108	112	2	2.5	0	8
30-Nov-21	8:00	8.51	7	6.3	0	0.3	104	111	2	2.5	0	8
30-Nov-21	9:00	8.58	8	6.8	0	0.3	105	111	2	2.5	0	8
30-Nov-21	10:00	8.62	7	7.0	0	0.3	111	111	2	2.5	0	8
30-Nov-21	11:00	8.61	9	7.8	0	0.3	107	111	2	2.5	0	8
30-Nov-21	12:00	8.57	8	8.0	0	0.3	108	111	2	2.5	0	8
30-Nov-21	13:00	8.69	14	9.5	0	0.2	109	111	2	2.5	0	9
30-Nov-21	14:00	8.57	16	11.8	0	0.2	110	111	2	2.5	0	8
30-Nov-21	15:00	8.64	14	13.0	0	0.2	115	111	2	2.5	0	9
30-Nov-21	16:00	8.71	13	14.3	0	0.2	114	111	2	2.4	0	9
30-Nov-21	17:00	8.81	12	13.8	0	0.2	108	111	2	2.4	0	9
30-Nov-21	18:00	9.22	13	13.0	5	0.4	117	111	2	2.4	0	9
30-Nov-21	19:00	9.40	18	14.0	0	0.4	111	111	3	2.4	0	9
30-Nov-21	20:00	9.15	12	13.8	0	0.2	103	111	3	2.4	0	9
30-Nov-21	21:00	9.70	16	14.8	0	0.2	106	111	3	2.4	0	10
30-Nov-21	22:00	9.37	18	16.0	0	0.2	109	111	3	2.4	0	9
30-Nov-21	23:00	9.07	21	16.8	0	0.2	119	112	3	2.4	0	9
1-Dec-21	0:00	9.78	15	17.5	9	0.6	111	111	3	2.4	0	10
1-Dec-21	1:00	9.18	9	15.8	0	0.6	116	112	2	2.3	0	9
1-Dec-21	2:00	8.91	8	13.3	0	0.6	101	111	2	2.3	0	9
1-Dec-21	3:00	8.68	7	9.8	0	0.6	104	111	2	2.3	0	9
1-Dec-21	4:00	9.34	8	8.0	0	0.6	129	111	2	2.3	0	9
1-Dec-21	5:00	9.46	12	8.8	0	0.6	107	111	2	2.3	0	9
1-Dec-21	6:00	8.95	5	8.0	0	0.6	129	111	2	2.3	0	9
1-Dec-21	7:00	8.25	4	7.3	0	0.6	110	111	1	2.2	0	8
1-Dec-21	8:00	8.17	8	7.3	0	0.6	103	111	1	2.2	0	8
1-Dec-21	9:00	8.63	9	6.5	0	0.6	119	112	1	2.1	0	8
1-Dec-21	10:00	8.57	10	7.8	0	0.6	104	111	2	2.1	0	8
1-Dec-21	11:00	8.58	12	9.8	0	0.6	110	111	2	2.1	0	8
1-Dec-21	12:00	8.49	8	9.8	0	0.6	109	111	1	2.1	0	8
1-Dec-21	13:00	8.42	14	11.0	0	0.6	112	112	1	2.0	0	8
1-Dec-21	14:00	8.67	9	10.8	0	0.6	103	111	2	2.0	0	9
1-Dec-21	15:00	8.34	9	10.0	0	0.6	114	111	1	2.0	0	8
1-Dec-21	16:00	8.35	13	11.3	0	0.6	108	111	1	2.0	0	8
1-Dec-21	17:00	8.80	10	10.3	0	0.6	111	111	2	2.0	0	8
1-Dec-21	18:00	8.54	10	10.5	0	0.4	111	111	2	2.0	0	8
1-Dec-21	19:00	8.39	12	11.3	0	0.4	114	111	2	1.9	0	8
1-Dec-21	20:00	8.86	8	10.0	0	0.4	106	111	2	1.9	0	9
1-Dec-21	21:00	8.63	11	10.3	0	0.4	103	111	1	1.8	0	8
1-Dec-21	22:00	8.69	19	12.5	0	0.4	112	111	2	1.8	0	8
1-Dec-21	23:00	8.61	11	12.3	0	0.4	109	111	2	1.7	0	9

Note: All times are Eastern Standard Time

Covanta - Durham York Energy Centre
Boiler No. 1 CEMS

		BH Outlet										Scrubber Inlet
		O_2	CO		SO_2		NOx		HCl		THC	O_2
		%	mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2	%
Date	Time	1-hr	1-hr	Rolling 4-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	1-hr
2-Dec-21	0:00	8.77	10	12.8	0	0.0	119	111	2	1.7	0	9
2-Dec-21	1:00	8.78	7	11.8	0	0.0	106	111	3	1.7	0	9
2-Dec-21	2:00	8.65	11	9.8	0	0.0	107	111	3	1.8	0	8
2-Dec-21	3:00	8.68	6	8.5	0	0.0	116	111	2	1.8	0	9
2-Dec-21	4:00	8.78	7	7.8	0	0.0	132	111	2	1.8	0	9
2-Dec-21	5:00	8.90	8	8.0	0	0.0	107	111	3	1.8	0	9
2-Dec-21	6:00	8.63	7	7.0	0	0.0	129	111	3	1.8	0	9
2-Dec-21	7:00	8.42	5	6.8	0	0.0	107	111	2	1.9	0	8
2-Dec-21	8:00	8.42	7	6.8	0	0.0	110	112	2	1.9	0	8
2-Dec-21	9:00	8.36	8	6.8	1	0.0	114	111	2	2.0	0	8
2-Dec-21	10:00	8.37	7	6.8	0	0.0	113	112	2	2.0	0	8
2-Dec-21	11:00	8.54	9	7.8	0	0.0	110	112	2	2.0	0	8
2-Dec-21	12:00	8.02	8	8.0	0	0.0	106	112	2	2.0	0	8
2-Dec-21	13:00	8.50	8	8.0	0	0.0	111	112	2	2.0	0	8
2-Dec-21	14:00	8.31	7	8.0	0	0.0	109	112	2	2.0	0	8
2-Dec-21	15:00	8.32	10	8.3	0	0.0	111	112	2	2.1	0	8
2-Dec-21	16:00	8.27	15	10.0	0	0.0	107	112	2	2.1	0	8
2-Dec-21	17:00	8.44	10	10.5	0	0.0	107	112	2	2.1	0	8
2-Dec-21	18:00	8.32	11	11.5	0	0.0	115	112	2	2.1	0	8
2-Dec-21	19:00	8.42	13	12.3	0	0.0	110	112	1	2.1	0	8
2-Dec-21	20:00	8.73	10	11.0	0	0.0	112	112	2	2.1	0	8
2-Dec-21	21:00	8.57	25	14.8	0	0.0	114	112	2	2.1	0	8
2-Dec-21	22:00	8.70	10	14.5	1	0.1	104	112	2	2.1	0	9
2-Dec-21	23:00	8.46	9	13.5	0	0.1	113	112	2	2.1	0	8
	Min	8.02	4	6.0	0	0	101	111	1	1.7	0	8
	Max	9.78	25	17.5	9	0.6	133	112	4	2.5	0	10
	Avg	8.76	10	9.7	0.2	0.3	111	111	2	2.2	0	9
	Std Dev	0.34	3.7	2.7	1.2	0.2	6.61	0.3	0.6	0.3	0	0.5

Note: All times are Eastern Standard Time

Covanta - Durham York Energy Centre
Boiler No. 2 CEMS

		BH Outlet									Scrubber Inlet
		O_2	CO		SO_2		NOx		HCl		THC	O_2
		%	mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2	%
Date	Time	1-hr	1-hr	Rolling 4-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	1-hr
29-Nov-21	0:00	9.01	11		0		112		2		0	8
29-Nov-21	1:00	9.64	11		0		113		2		0	9
29-Nov-21	2:00	9.38	12		0		105		2		0	9
29-Nov-21	3:00	9.01	13	11.8	0		98		2		0	8
29-Nov-21	4:00	9.17	14	12.5	0		117		3		0	8
29-Nov-21	5:00	8.67	16	13.8	0				3		0	8
29-Nov-21	6:00	9.01	13	14.0	0				2		0	8
29-Nov-21	7:00	8.78	8	12.8	0		113		1		0	8
29-Nov-21	8:00	9.40	10	11.8	4		109		3		0	9
29-Nov-21	9:00	9.23	16	11.8	0		111		4		0	9
29-Nov-21	10:00	8.91	12	11.5	0		110		3		0	8
29-Nov-21	11:00	8.89	7	11.3	0		101		3		0	8
29-Nov-21	12:00	8.96	10	11.3	3		118		4		0	8
29-Nov-21	13:00	8.90	8	9.3	0		110		4		0	8
29-Nov-21	14:00	9.08	8	8.3	0		107		3		0	8
29-Nov-21	15:00	9.21	13	9.8	0		118		3		0	9
29-Nov-21	16:00	8.94	11	10.0	0		108		3		0	8
29-Nov-21	17:00	9.04	8	10.0	0		105		3		0	8
29-Nov-21	18:00	9.03	10	10.5	0		114		5		0	8
29-Nov-21	19:00	10.05	23	13.0	2		108		6		0	10
29-Nov-21	20:00	9.99	15	14.0	0		110		4		0	9
29-Nov-21	21:00	9.17	7	13.8	0		118		3		0	9
29-Nov-21	22:00	8.89	7	13.0	0		104		2		0	8
29-Nov-21	23:00	8.84	8	9.3	0	0.4	105		2	3.0	0	8
30-Nov-21	0:00	8.97	10	8.0	0	0.4	118		3	3.0	0	8
30-Nov-21	1:00	9.45	9	8.5	0	0.4	109		3	3.1	0	9
30-Nov-21	2:00	9.08	8	8.8	0	0.4	107		3	3.1	0	8
30-Nov-21	3:00	8.94	9	9.0	0	0.4	102		2	3.1	0	8
30-Nov-21	4:00	8.73	9	8.8	0	0.4	120		2	3.1	0	8
30-Nov-21	5:00	8.68	10	9.0	0	0.4	99				0	8
30-Nov-21	6:00	9.08	8	9.0	0	0.4	130	111			0	8
30-Nov-21	7:00	8.40	8	8.8	0	0.4	114	111	2		0	8
30-Nov-21	8:00	8.46	9	8.8	0	0.2	100	110	2		0	8
30-Nov-21	9:00	8.68	7	8.0	0	0.2	118	111	3		0	8
30-Nov-21	10:00	8.55	7	7.8	0	0.2	107	110	2		0	8
30-Nov-21	11:00	8.70	13	9.0	0	0.2	104	111	2		0	8
30-Nov-21	12:00	9.06	6	8.3	0	0.1	116	110	3		0	8
30-Nov-21	13:00											
30-Nov-21	14:00											
30-Nov-21	15:00											
30-Nov-21	16:00											
30-Nov-21	17:00											
30-Nov-21	18:00	8.04	14		0		81		0		1	7
30-Nov-21	19:00	8.96	12		0		111		0		0	8
30-Nov-21	20:00	9.19	13		0		120		0		0	8
30-Nov-21	21:00	9.91	11	12.5	0		104		0		0	9
30-Nov-21	22:00	9.34	23	14.8	0		110		0		0	9
30-Nov-21	23:00	9.30	20	16.8	0		112		0		0	8
1-Dec-21	0:00	9.26	9	15.8	0		114		0		0	9
1-Dec-21	1:00	8.86	11	15.8	0		111		0		0	8
1-Dec-21	2:00	9.23	24	16.0	1		102		0		0	9
1-Dec-21	3:00	9.07	21	16.3	0		99		0		0	8
1-Dec-21	4:00	9.10	13	17.3	0		119		0		0	9
1-Dec-21	5:00	8.77	9	16.8	0		102		1		0	8
1-Dec-21	6:00	8.76	9	13.0	0		119		1		0	8
1-Dec-21	7:00	8.56	10	10.3	0		111		1		0	8
1-Dec-21	8:00	9.05	14	10.5	0		112		1		0	8
1-Dec-21	9:00	8.89	13	11.5	0		111		1		0	8
1-Dec-21	10:00	8.77	9	11.5	0		112		1		0	8
1-Dec-21	11:00	8.86	13	12.3	0		105		1		0	8
1-Dec-21	12:00	9.01	12	11.8	0		114		1		0	8
1-Dec-21	13:00	9.10	14	12.0	0		110		1		0	8
1-Dec-21	14:00	9.11	28	16.8	0		107		1		0	8
1-Dec-21	15:00	9.32	18	18.0	0		113		1		0	9
1-Dec-21	16:00	8.97	20	20.0	0		112		1		0	8
1-Dec-21	17:00	9.31	16	20.5	0	0.0	106	109	1	0.5	0	8
1-Dec-21	18:00	9.17	18	18.0	0	0.0	114	110	2	0.6	0	9
1-Dec-21	19:00	9.10	38	23.0	0	0.0	108	110	2	0.7	0	8
1-Dec-21	20:00	9.22	20	23.0	0	0.0	107	110	2	0.8	0	9
1-Dec-21	21:00	9.18	11	21.8	0	0.0	118	110	0	0.8	0	9
1-Dec-21	22:00	9.21	13	20.5	0	0.0	107	110	0	0.8	0	9
1-Dec-21	23:00	9.35	12	14.0	0	0.0	106	110	2	0.9	0	8

Note: All times are Eastern Standard Time

Covanta - Durham York Energy Centre
Boiler No. 2 CEMS

		BH Outlet										Scrubber Inlet
		O_2	CO		SO_2		NOx		HCl		THC	O_2
		%	mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2	%
Date	Time	1-hr	1-hr	Rolling 4-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	1-hr
2-Dec-21	0:00	9.16	10	11.5	0	0.0	116	110	4	1.0	0	9
2-Dec-21	1:00	8.95	14	12.3	0	0.0	112	110	4	1.2	0	8
2-Dec-21	2:00	9.90	11	11.8	0	0.0	106	110	3	1.3	0	9
2-Dec-21	3:00	9.62	18	13.3	0	0.0	108	111	1	1.4	0	9
2-Dec-21	4:00	9.18	15	14.5	0	0.0	123	111	1	1.4	0	8
2-Dec-21	5:00	9.62	18	15.5	0	0.0	103	111	1	1.4	0	9
2-Dec-21	6:00	9.19	12	15.8	0	0.0	120	111	1	1.4	0	9
2-Dec-21	7:00	8.89	9	13.5	0	0.0	107	111	1	1.4	0	8
2-Dec-21	8:00	9.52	17	14.0	11	0.5	110	111	2	1.5	0	9
2-Dec-21	9:00	8.96	25	15.8	4	0.6	114	111	2	1.5	0	8
2-Dec-21	10:00	9.35	12	15.8	4	0.8	107	111	2	1.5	0	9
2-Dec-21	11:00	9.29	11	16.3	0	0.8	106	111	1	1.5	0	9
2-Dec-21	12:00	9.03	17	16.3	0	0.8	112	111	1	1.5	0	8
2-Dec-21	13:00	8.89	25	16.3	0	0.8	112	111	1	1.5	0	8
2-Dec-21	14:00	9.68	9	15.5	0	0.8	108	111	2	1.6	0	9
2-Dec-21	15:00	9.09	15	16.5	0	0.8	112	111	2	1.6	0	8
2-Dec-21	16:00	8.82	9	14.5	0	0.8	111	111	1	1.6	0	8
2-Dec-21	17:00	8.88	14	11.8	0	0.8	107	111	2	1.7	0	8
2-Dec-21	18:00	9.04	11	12.3	0	0.8	113	111	3	1.7	0	8
2-Dec-21	19:00	9.26	17	12.8	0	0.8	111	111	2	1.7	0	9
2-Dec-21	20:00	9.03	13	13.8	0	0.8	105	111	2	1.7	0	8
2-Dec-21	21:00	9.09	14	13.8	0	0.8	115	110	1	1.8	0	8
2-Dec-21	22:00	8.82	14	14.5	0	0.8	109	111	1	1.8	0	8
2-Dec-21	23:00	8.80	22	15.8	0	0.8	103	110	1	1.8	0	8
9-Dec-21	0:00	8.92	8		2		114		2		0	8
9-Dec-21	1:00	8.82	7		0		109		1		0	8
9-Dec-21	2:00	9.31	9		0		105		2		0	8
9-Dec-21	3:00	9.28	9	8.3	0		102		1		0	8
9-Dec-21	4:00	9.06	10	8.8	0		123		1		0	8
9-Dec-21	5:00	9.46	10	9.5	2		107		2		0	9
9-Dec-21	6:00	9.30	9	9.5	0		122		1		0	9
9-Dec-21	7:00	9.03	10	9.8	0		109		0		0	8
9-Dec-21	8:00	9.04	8	9.3	0		107		1		0	8
9-Dec-21	9:00	8.81	7	8.5	0		114		2		0	8
9-Dec-21	10:00	9.12	8	8.3	0		110		2		0	8
9-Dec-21	11:00	9.09	8	7.8	0		108		2		0	8
9-Dec-21	12:00	8.92	8	7.8	0		113		1		0	8
9-Dec-21	13:00	8.78	9	8.3	0		111		1		0	8
9-Dec-21	14:00	8.77	8	8.3	0		107		2		0	8
9-Dec-21	15:00	8.77	8	8.3	0		116		2		0	8
9-Dec-21	16:00	8.78	10	8.8	0		107		1		0	8
9-Dec-21	17:00	9.02	16	10.5	0		105		1		0	8
9-Dec-21	18:00	8.91	12	11.5	0		115		0		0	8
9-Dec-21	19:00	8.70	12	12.5	0		110		0		0	8
9-Dec-21	20:00	9.23	6	11.5	0		101		1		0	8
9-Dec-21	21:00	9.27	9	9.8	0		115		2		0	8
9-Dec-21	22:00	9.00	8	8.8	0		112		2		0	8
9-Dec-21	23:00	9.22	8	7.8	0	0.2	109	110	2	1.3	0	8
10-Dec-21	0:00	8.88	8	8.3	0	0.1	112	110	2	1.3	0	8
10-Dec-21	1:00	8.84	8	8.0	0	0.1	108	110	3	1.4	0	8
10-Dec-21	2:00	9.00	12	9.0	0	0.1	106	110	3	1.5	0	8
10-Dec-21	3:00	9.02	9	9.3	0	0.1	100	110	3	1.5	0	8
10-Dec-21	4:00	9.15	8	9.3	0	0.1	122	110	3	1.6	0	8
10-Dec-21	5:00	9.05	8	9.3	0	0.0	100	110	4	1.7	0	8
10-Dec-21	6:00	9.25	8	8.3	0	0.0	122	110	4	1.8	0	9
10-Dec-21	7:00	9.05	8	8.0	0	0.0	111	110	4	2.0	0	8
10-Dec-21	8:00	8.77	8	8.0	0	0.0	112	110	4	2.1	0	8
10-Dec-21	9:00	8.94	10	8.5	0	0.0	111	110	3	2.2	0	8
10-Dec-21	10:00	8.59	7	8.3	0	0.0	114	110	3	2.2	0	8
10-Dec-21	11:00	8.88	8	8.3	0	0.0	101	110	3	2.3	0	8
10-Dec-21	12:00	8.77	6	7.8	0	0.0	116	110	3	2.3	0	8
10-Dec-21	13:00	9.03	12	8.3	0	0.0	108	110	3	2.4	0	8
10-Dec-21	14:00	9.08	9	8.8	0	0.0	107	110	2	2.4	0	8
10-Dec-21	15:00	8.72	10	9.3	0	0.0	110	110	3	2.5	0	8
10-Dec-21	16:00	8.84	8	9.8	0	0.0	110	110	3	2.5	0	8
10-Dec-21	17:00	8.90	6	8.3	0	0.0	106	110	2	2.6	0	8
10-Dec-21	18:00	8.82	6	7.5	0	0.0	112	110	3	2.7	0	8
10-Dec-21	19:00	9.30	9	7.3	0	0.0	109	110	2	2.8	0	9
10-Dec-21	20:00	9.22	9	7.5	0	0.0	103	110	2	2.8	0	9
10-Dec-21	21:00	9.32	7	7.8	0	0.0	113	110	1	2.8	0	9
10-Dec-21	22:00	9.23	9	8.5	0	0.0	111	110	1	2.8	0	8
10-Dec-21	23:00	9.44	8	8.3	0	0.0	108	110	1	2.7	0	9
	Min	8.04	6	7.3	0	0	81	109	0	0.5	0	7
	Max	10.05	38	23.0	11	0.8	130	111	6	3.1	1	10
	Avg	9.06	12	11.7	0.2	0.2	110	110	2	1.8	0	8
	Std Dev	0.30	5.0	3.6	1.2	0.3	6.22	0.4	1.2	0.7	0	0.5

Note: All times are Eastern Standard Time